

**U.S. Department of the Interior
Bureau of Land Management**

**Nutrias Prospect Oil Well
Federal Lease NMNM116554
Section 35, T27N, R2E,
Rio Arriba County, New Mexico**

DOI-BLM-NM-F020-2011-004-EA

May 2011

U.S. Department of the Interior
Bureau of Land Management
Taos Field Office
226 Cruz Alta Road
Taos, New Mexico 87571
575-758-8851



Nutrias Prospect Oil Well

DOI-BLM-NM-F020-2011-004-EA

Chapter 1: Introduction

1.1 Purpose and Need for Action

Background

Blue Dolphin Production, LLC (Blue Dolphin) submitted an application for permit to drill (APD) to the Bureau of Land Management (BLM) Taos Field Office on January 20, 2011. Blue Dolphin proposes to drill an exploratory oil well in Rio Arriba County, New Mexico on public land leased to Blue Dolphin under the jurisdiction of the Bureau of Land Management (Federal Lease NMNM116554). In order to drill the well, Blue Dolphin would construct an access road and grade a well pad. Blue Dolphin's purpose for the proposed well is to determine whether petroleum or other fossil hydrocarbons are present in the project area, and if so, whether their production is economically feasible.

The project is located in the NE ¼ of Section 35, T27N, R2E. The proposed well pad would measure about 250 feet by 250 feet (1.43 acre). An access road about 1310 feet long and 50 feet wide would be constructed from an existing road to the well pad (1.50 acre). Total area of disturbance would be 2.93 acres.

Purpose and Need

The purpose of this action is for the BLM to provide for the exercise of the applicant's valid existing rights to explore for and develop fluid mineral resources from areas under Federal lease to the applicant. The BLM needs to consider this action in accordance with its multiple-use mandate under the Federal Lands Policy and Management Act of 1976 (FLPMA), the Mineral Leasing Act of 1920 (MLA), as amended, and the Federal Onshore Oil and Gas Leasing Reform Act of 1987.

It is the policy of the BLM to make mineral resources available for production and to encourage development of mineral resources to meet national, regional, and local needs. The MLA authorizes the BLM to issue oil and gas leases for the exploration of oil and gas and permit the development of those leases. At the same time, the BLM is obliged by FLPMA to ensure that mineral development is carried out in a manner which minimizes environmental damage and provides for the rehabilitation of affected lands.

In preparing this environmental assessment the BLM will determine whether development of the Nutrias Well is consistent with existing leases and land use plans for the project area, and will identify measures to protect environmental resources specified in governing land use plans and relevant federal statutes.

Decision to be made

The BLM will decide whether or not to grant a permit to drill, and if granted, under what terms and conditions, consistent with the rights granted to the applicant.

1.2 Land Use Plan Conformance

The proposed project lies on land administered by the BLM. Management of this land is prescribed by the 1988 Taos Resource Management Plan (1988 RMP) (USDI 1988). The Taos Resource Management Plan was amended in 1991 by the *Albuquerque District Resource Management Plan Amendment – Oil & Gas Leasing and Development*, which standardized stipulations for oil and gas development. The 1988 RMP, as amended, provides for oil and gas development at the location of the proposed project.

Pursuant to 40 Code of Federal Regulations (CFR) 1508.28 and 1502.21, this site-specific environmental assessment (EA) tiers to and incorporates by reference the information and analysis contained in the 1988 Taos Resource Management Plan. The 1988 RMP is available for review at the Taos Field Office, Taos, New Mexico. This EA addresses the resources and impacts on a site-specific basis as required by the National Environmental Policy Act (NEPA) of 1969, as amended (Public Law 91-90, 42 USC 4321 et seq.).

On June 11, 2010, the Draft Taos Resource Management Plan (2010 Draft RMP) and Environmental Impact Statement (EIS) (USDI 2010) were submitted to the public for review. The 2010 Draft RMP identifies alternatives for management of mineral leasing on this parcel. Under Alternative A, the Preferred Alternative, the lease area is designated as controlled surface use for mineral leasing, which provides for oil and gas development but with additional restrictions than those applied by the 1988 RMP.

The proposed project area also lies within the boundaries of the area managed under the 1990 Rio Chama Management Plan (USDI 1990). There are no identified inconsistencies between the proposed project and this plan, the 1998 RMP, or any officially approved and adopted resource-related plans of other Federal agencies, state and local governments, and Indian tribes.

1.3 Identification of Issues

Representatives of the project proponent met on site with BLM staff on August 5, 2010 in order to identify issues that should be addressed in this EA. The proponent also directed its environmental consultant to conduct biological and cultural resource surveys of the location of the proposed project to assess the potential for impacts on those resources. The proponent's representative discussed the impact of the project on local public roads with staff of the county highway department. Finally, the proponent's environmental consultant reviewed published environmental data, notably the 1988 RMP, 2010 Draft RMP, and 1990 Rio Chama Management Plan and conducted analysis of potential impact using geographic information system tools (GIS).

Notice of this action was posted on the electronic NEPA log at the BLM New Mexico website on October 22, 2010, to inform the public of this proposal and to solicit input on potential impacts.

Based on these efforts, the following issues are determined relevant to the analysis of this action:

1.4.1 Air Quality and Noise

1.4.1.1 Air Quality

- Potential impacts from dust and engine emissions during access road and well pad construction and well drilling, and an incremental increase in vehicle emissions during operation of the well.

1.4.1.2 Noise

- Potential short-term noise during well pad construction and well drilling and long-term noise resulting from equipment during operation of the well.

1.4.2 Cultural Resources

- Potential to impact cultural resources in the vicinity of the project.

1.4.3 Special Status Species

- Potential to impact loggerhead strike nesting habitat and fringed bat foraging habitat.

1.4.4 Migratory Birds

- Potential impacts to migratory bird populations within an Avian Species Concentration Area including seven species of migratory birds considered by BLM to be at conservation risk.

1.4.5 Socioeconomic Effects

1.4.5.1 Transportation

- Potential impacts related to volume and nature of traffic on local roads.

1.4.6 Visual Resources

- Consistency with Visual Resource Management (VRM) Class III objectives for the area.

1.4.7 Wildlife

- Potential impacts to a big game migration corridor and a big game wintering area.

1.4 Issues Considered but Dismissed from Analysis.

The following issues were considered but deemed to lack potentially significant effects (see appendix VI for further explanation of dismissed issues):

- Areas of critical environmental concern (ACECs) and special management areas (SMAs)
- Environmental justice
- Farmlands, prime or unique
- Floodplains
- Wastes, hazardous or solid
- Water quality, surface and ground
- Wetlands and riparian zones
- General topography and surficial geology
- Mineral resources, geology and paleontology
- Soils
- Watershed hydrology
- Vegetation, Forestry
- Livestock grazing
- Wild horse and burros

- Recreation
- Public health and safety

Chapter 2: Description of Alternatives

2.1 Alternative A: Proposed Action

Description of the Proposed Action

The proposed action is to authorize Blue Dolphin to construct and drill the exploratory Nutrias oil well on BLM-administered land in Rio Arriba County, New Mexico. Blue Dolphin holds a valid lease for oil and gas drilling at this location issued by the BLM. An APD has been submitted by Blue Dolphin for the Nutrias oil well. The APD includes best management practices (BMPs) and a storm water pollution prevention plan (SWPPP) that cover mitigation of impacts to vegetation, soil, surface water and other resources. Additional measures, which would be attached by the BLM as conditions of approval (see Appendix V), have been incorporated into the proposed project by Blue Dolphin.

The proposed project is located approximately fifteen miles southwest of Tierra Amarilla, New Mexico in the NE ¼ of Section 35, T27N, R2E. Construction work is planned to start during summer of 2011 and the estimated duration of construction and drilling for the well is 5-10 days. In order to drill the well, Blue Dolphin would construct an access road and grade a well pad. The proposed well pad would measure about 250 feet by 250 feet (1.43 acre). An access road about 1310 feet long and 50 feet wide would be constructed to connect the existing road to the well pad (1.50 acre). Total surface disturbance for access road and the well pad construction would be 2.93 acres.

Construction and Operation of the Proposed Well

Construction plans for the proposed well are included in appendix IV. Additional, site specific design features have been adopted by Blue Dolphin to minimize impacts to air, soil, water, wildlife, visual resources, and the existing access road. These measures are detailed in appendix V – Conditions of Approval.

The proposed project can be considered to consist of four phases: construction, drilling and completion, production, and reclamation.

No construction or drilling operations would be performed from November 1st through March 30th. The construction phase would last approximately 3 days. Construction activities would take place during daylight hours. It is estimated that the peak construction crew would include 5 people. It is estimated that on-site personnel would make daily round trips to the site in 3 light trucks for the duration of the project.

Prior to any clearing, the nearby archaeological site (LA 167151) would be fenced off along its boundary to exclude construction activities. Installation of the fence and initial grading would be observed by an archaeological monitor to ensure site avoidance.

The site and access road would be cleared and graded and reserve pit excavated using a bulldozer which would be delivered to the site on a semi-trailer truck.

The well pad would be cleared of all vegetation and leveled for drilling. Subsoil and topsoil would be segregated and stockpiled within the pad boundary for use in reclamation. A reserve pit measuring about 60 feet by 120 feet would be constructed on the southwest corner of the well pad to hold drill mud and cuttings. Once constructed, the reserve pit would be fenced along its perimeter and netted to keep birds and animals out.

Portable toilets would be brought on site and remain throughout construction, drilling and reclamation. Any wastewater generated in association with temporary, portable sanitary facilities would be periodically removed by a licensed hauler and brought to an existing municipal sewage treatment facility. Trash or garbage generated by onsite personnel would be collected in receptacles and disposed of at an appropriate off site facility as needed.

Construction of the access road would entail clearing of vegetation and grading level to a width of 50 feet. The access road would be designed with meander aimed at reducing sight-lines and visual impacts. The access road would incorporate turn-outs and culverts as specified in the conditions for approval to control drainage. After construction, the access road would be maintained for the lifetime of the well. Cattle guards on the existing gravel-surfaced road *en route* to the project would be removed and replaced with timber construction pads to support construction vehicles. Following construction, the timber construction pads would be removed and the cattle guards re-installed. Two existing cattle guards which are in poor repair would be replaced with new cattle guards. All costs associated with upgrading the roadway and the cattle guards would be borne by the project sponsor.

Soils exposed by grading for the road and well pad are susceptible to erosion by rainfall. Measures to prevent erosion and off-site discharge of silt-laden water will be detailed in the Storm Water Pollution Prevention Plan (SWPPP), which must be signed by a corporate officer and submitted to BLM prior to the start of construction. During the construction and completion phase, temporary erosion control methods will be used to prevent erosion by rainfall events and the subsequent discharge of sediment-filled water to nearby watercourses. These erosion control methods will be put in place prior to the initiation of construction activities at the project location. The construction of earthen berms, water bars, silt fences, or sediment traps would prevent fluid seepage into dry washes and surface or shallow ground water. After construction has been completed, the replacement of natural vegetation found in the area will be used as a permanent erosion control method. Established vegetation is one of the best methods for permanent erosion control.

After construction is complete the drilling phase would begin. A gated temporary fence would be installed around the well pad to exclude livestock and large animals at the onset of drilling activities. The drill rig would be delivered by three large trucks. The well is anticipated to take 5 days to drill. The rig would be operated during daylight hours by a crew of 6 to 10 people. It is estimated that the drilling crew would make daily round trips to the site in 3 light trucks for the duration of during the drilling phase. The drill rig and related equipment would be delivered on three large trucks. Fresh water for drill mud would be appropriated from the El Vado reservoir and delivered by tanker truck. Large trucks would make one or two daily deliveries of well casing, drilling mud and other consumables.

If the well proves to be unproductive the well would be properly plugged and abandoned. Construction equipment and debris would be removed and all disturbed areas would be restored to preconstruction conditions.

If the well is deemed to be productive then it would be completed for production. The well would be completed by a completion rig that would operate for about 3 days. Cut portions of the well site would be backfilled and unused portions of the well site would be stabilized and re-vegetated. Active areas of the well site would be fenced and gated to exclude livestock and large animals.

A pump-jack and 3 to 4 storage tanks would be delivered to the site and installed. Oil and other fluids produced by the well would be stored in the tanks, and the well site would be serviced by tank trucks several times per month. Low profile storage tanks and production equipment would be used to reduce visual impacts. Production equipment would be painted to blend with the natural color of the landscape.

Production would continue for as long as the well remains economically feasible. At the end of the life of the well the pump-jack and storage tanks would be removed and the well would be properly plugged. All other equipment and debris would be removed and all disturbed areas would be restored to preconstruction contours and revegetated.

Site Restoration

When production has ended or in the event of an unproductive well, the site would be restored to its original condition. Blue Dolphin would remove construction equipment and debris as part of restoration. Since project site restoration generally consists of reseeding disturbed areas and earthwork, it is very weather and season sensitive. Site restoration would follow a revegetation plan developed in consultation with the BLM and other appropriate agencies. Disturbed areas would be re-seeded with a mix of native plant species at the time of year that would best assure success (e.g., prior to the rainy season). The revegetation plan would specify the seed mix and vegetation species suited to restoration activities based on the habitats being restored, and the methods for seed application or planting.

Construction clean-up may require the use of a motor grader, dump trucks, front-end loaders, and light trucks for transportation of any waste materials.

2.2 Alternative B: No Action

The BLM NEPA Handbook (H-1790-1) (USDI 2008) states that for environmental assessments on externally initiated proposed actions, the “No Action” alternative generally means that the proposed activity would not take place. This option is provided in 43 CFR 3162.3-1(b)(2). This alternative would deny the approval of the application, and the current land and resource uses would continue to occur in the proposed project area. No mitigation measures would be required.

Under the terms of valid Federal mineral leases, the lessee has the right to develop mineral resources. Other laws, regulations, and policy include provisions for the economic development of existing leases. By Federal law, the government must abide by the terms, conditions, and provisions that were agreed to when the leases were issued. Therefore, the proponent would likely submit another proposal on this lease to explore for oil resources in the exercise of its valid existing rights.

2.3 Alternatives Considered but not Analyzed in Detailed

Due to the limited scope of the proposed exploratory oil well, there are relatively few feasible alternatives to the proposed project. The extent of the prospective oil deposit identified by seismic survey is limited, so alternative locations may be infeasible simply because they would not facilitate access to the oil deposit.

Chapter 3: Affected Environment

Background – Environmental Setting

The proposed action is located on elevated terrain in a very rural area that is used primarily for livestock grazing and is important for wildlife and big game habitat. The project is on upland level to rolling terrain. The upland area is occasionally dissected by wooded arroyos and draws which drain to the Chama River bottoms. The Chama River is located about 2 miles to the west. The arid desert climate averages 13 to 16 inches of annual precipitation with a frost-free period of 100 to 130 days and an average annual temperature of 45 to 49 degrees F. The proposed site is located within the Elpedro silt loam soil type.

The Elpedro silt loam soil is well drained, has a slope of 1 to 5 percent, and is located on the footslope of hills and fan remnants. It is old alluvium derived from sandstone and shale.

Vegetation is characterized by Great Basin desert scrub on hills, slopes, and some valley bottom settings, while patches of desert grassland occur in the valley bottoms where soil texture tends to be finer and water tends to pool following major precipitation events. The canopy of the desert shrub vegetation is dominated by big sagebrush. Scattered plants of Riddell's groundsel and pinque bitterweed occur throughout the area as well. The ground cover stratum is dominated by blue grama and crested wheatgrass. Current land use in the vicinity consists of wildlife habitat and livestock grazing.

GIS analysis of the proposed project area indicates that this topographic and vegetative setting encompasses several hundred thousand contiguous acres in a roughly north-south orientation adjacent to the eastern edge of the Chama River bottoms.

3.1 Air Quality and Noise

3.1.1 Air Quality

The 2010 Draft RMP indicates that there are no nonattainment areas for air quality in the planning area which is a Class II air quality area. This indicates that air quality in the planning area is generally good. Exceptions can occur, especially during wildfire events and high wind days when dust is mobilized. BLM actions that impact air quality include vegetation treatments that involve prescribed burning or disking, vehicle emissions, and any mining or mineral development on agency land including oil and gas development. Emission from treatments can include smoke and dust from exposed soil. Vehicle emission sources controlled by the BLM include construction vehicles, work trucks, and OHVs. Engines used in various phases of oil and gas development also produce emissions which can be mitigated through BMPs. Many mining activities including oil and gas also result in increases in fugitive dust.

3.1.2 Noise

The proposed project is located within an expansive and remote area with very little noise from human activity.

3.2 Cultural Resources

A field survey identified a cultural resource in the vicinity of the project. The site is interpreted to be the remains of a camp of Archaic age where various activities took place, including food preparation and stone tool fabrication and maintenance. It is judged to be in good condition and eligible for listing on the National Register of Historic Places, under criterion D, which establishes eligibility on the basis of the information contained in the site. Under this criterion, jurisdictional agencies are required to assess affects of the proposed action to the integrity of the information content of the site, but not to issues such as setting. At another location in the project area, the field survey found a single stone flake derived from the manufacture of a stone tool. As an isolated find it is not eligible to the National Register.

3.3 Special Status Species

A biological survey of the project location did not find endangered species, but determined that it contains nesting habitat suitable for the loggerhead shrike, a bird, and foraging habitat for the fringed bat (see Appendix II). Both of these species occur in the general vicinity of the proposed action.

3.4 Migratory Birds

The 2010 Draft RMP documents that the proposed action is located on the eastern periphery of an Avian Species Concentration Area. The Avian Species Concentration Area is associated with the Rio Chama bottoms and serves as a migration corridor for many species of migratory birds. In particular, a biological survey identified habitat suitable for seven species of migratory birds that are considered by BLM to be at conservation risk (see Appendix II).

3.5 Socioeconomic Effects

3.5.1 Transportation

The public road that passes the location of the proposed project is a two-lane gravel-surfaced road maintained for light use. Although no data is readily available, it was observed that traffic in the area is extremely sparse consisting primarily of BLM vehicles and local residents.

The proponent's representative met with county highway officials on August 10, 2010. County officials noted that cattle guards on the road are not strong enough to support heavy construction equipment necessary for well site construction and well drilling. They also noted that two cattle guards are in poor such poor condition that they would not survive removal and reinstallation.

3.6 Visual Resources

The proposed action is sited on an elevated location overlooking and just south of Nutrias Canyon (see figures 3 and 4). This area is designated as Visual Resource Management (VRM) Class III. Management goals for VRM Class III, as stated in the 1988 RMP, are to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

The 2010 Draft RMP indicates that visual resource management on public land be conducted in accordance with BLM Handbook 8410 and BLM Manual 8411. Management objectives for Class III designations include that operators must comply with the visual resource management objectives established in the land use plan for all activities that alter landforms, disturb vegetation, or require structures as outlined in the Gold Book for Oil and Gas Exploration and Construction (BLM 8400 Manual Series) (USDI 2007).

3.7 Wildlife

Wildlife is abundant and diverse throughout the area. A wide range of large and small mammals can be found, including the big game species Rocky Mountain elk, mule deer, black bear, and mountain lion. Avian species are varied. Various reptiles, amphibians and insects can also be found in this habitat.

3.7.1 Big Game

The proposed action is within a big game migration corridor and a big game wintering area used by elk and mule deer, as documented in the 1998 RMP, 2010 Draft RMP, and the Rio Chama Management Plan. Big game species migrate from summer range in southern Colorado and northern New Mexico to winter in this area. Migration and wintering activities usually occur from December through March.

The proposed project lies within the New Mexico Department of Game and Fish (NMDGF) game management unit (GMU) #51 which is located within the NMDGF Chama Elk Population Region. The

Chama Elk Population Region encompasses 2,449,221 acres across most of Rio Arriba County and part of western Taos County. The NMDGF estimated the September 2002 pre-hunt elk population for the Chama region to be 9,200 (NMDGF 2003). This number is calculated from the 2001-02 winter elk survey information or estimate, if not surveyed. The winter population number is increased by estimates of calves born in late spring and any migration into the GMU and then decreased by estimates of mortality and any migration out of the GMU to yield the September 2002 pre-hunt elk population estimate.

A 1990 agreement between NMDGF and BLM (agreement No. 1.15.90.00) requires NMDGF to regulate wildlife populations on public land consistent with resource capacity.

Chapter 4: Environmental Effects

4.1 Direct and Indirect Effects

4.1.1 Alternative A: Proposed Action

4.1.1.1 Air Quality

During construction of the well, air quality would be directly impacted by exhaust emissions from vehicles and motorized equipment, chemical odors, and dust. After the well is completed (or abandoned if unproductive), emissions of exhaust, dust and VOCs would diminish. Some exhaust emissions would continue from the pump jack; some dust would be generated by service trucks, and minimal VOCs might be generated by the oil stored on site.

An estimate of total emissions generated by drilling the Nutrias well is provided in Appendix VII. This estimate suggests that constructing the well site and drilling the well will generate about 1.2 metric tons of criteria pollutants. Annual operation of the well would generate about 1.5 metric tons of criteria pollutants.

These are relatively minor quantities. National Park Service guidance for evaluating air quality impacts to Class I air quality areas, where more stringent standards apply, recommend that screening modeling may be needed for actions that produce more than 50 tons per year. For lower emissions, the NPS suggests that qualitative description is sufficient (NPS 2011, page 8). Given that this is a Class II area, higher thresholds are warranted.

Best management practices incorporated in the proposed action to address these impacts include emission control standards and regular dust suppression on the public roads accessing the project area, and on the access road and well pad.

Given the adoption of best management practices, the proposed project is anticipated to have a low effect to local air quality for the short and long term.

The likely impact of this well on air quality during construction and possible production is minimal. The potential for significant impacts arises if this well demonstrates the presence of hydrocarbons in quantities sufficient to warrant development of an oil field.

Should this occur, the potential impact of the proposed oil field would be subject to NEPA review. This review would draw on the history of oil and gas leasing and development in the adjacent San Juan Basin. Over the past decade, the leasing of Federal oil and gas mineral estate in Farmington Field Office has resulted in 450 to 500 wells drilled on federal leases each year.

The assessment of GHG emissions and climate change is in its formative phase. It is currently not feasible to know with certainty the net impacts from the proposed action on climate. The inconsistency in results of scientific models used to predict climate change at the global scale coupled with the lack of scientific models designed to predict climate change on regional or local scales limit the ability to quantify potential future impacts of decisions made at this level. When further information on the impacts to climate change is known, such information would be incorporated into the BLM's planning and NEPA documents as appropriate.

4.1.2 Mitigation

The total annual air emissions generated by this well would be minimal. The BLM's regulatory jurisdiction over field production operations includes best management practices designed to reduce impacts to air quality by reducing all emissions from field production and operations. Typical measures may include: flare hydrocarbon and gases at high temperatures in order to reduce emissions of incomplete combustion; require that vapor recovery systems be maintained and functional in areas where petroleum liquids are stored; revegetate areas of the pad not required for production facilities to reduce the amount of dust from the pads; and water dirt roads during periods of high use in order to reduce fugitive dust emission.

In regard to mitigation of potential impacts of greenhouse gases, current BLM authority is limited. The EPA's inventory data describes "Natural Gas Systems" and "Petroleum Systems" as the two major categories of total US sources of GHG gas emissions. The inventory identifies the contributions of natural gas and petroleum systems to total CO₂ and CH₄ emissions (natural gas and petroleum systems do not produce noteworthy amounts of other greenhouse gases). Within the larger category of "Natural Gas Systems", the EPA identifies emissions occurring during distinct stages of operation, including field production, processing, transmission and storage, and distribution. "Petroleum Systems" subactivities include production field operations, crude oil transportation and crude oil refining. Within the two categories, the BLM has authority to regulate only those field production operations that are related to oil and gas measurement, and prevention of waste (via leaks, spills and unauthorized flaring and venting).

4.1.1.2 Noise

Construction and operation of the proposed action would result in increased noise in the area. Noise levels would be greatest during construction of the well pad and drilling the well. Noise has the potential to disturb wildlife – including avian, threatened or endangered, and big game species. Based on observations from previous well installations, it is thought that in general, noise would induce wildlife to simply avoid the area during the construction phase of the well pad. However, even minimal disturbance to wintering big game populations can reduce habitat effectiveness and result in vital energy expenditures during this sometimes critical period (see wildlife sections). Big game migrations and wintering in the area generally occur from December through to March.

The proposed project is anticipated to have moderate noise effects in the short term (less than 30 days) during construction and drilling and low noise effects in the long term. Given the exclusion on construction and drilling from November 1st through March 30th, no noise impacts on migrating or wintering big game are anticipated.

4.1.1.2 Cultural Resources

A field survey identified a cultural resource in the vicinity of the project (LA 167151). The site is considered eligible for listing on the National Register of Historic Places, and as such the BLM must

consider actions that would impair the integrity of the site. Although the identified site has been delineated by the archaeological survey, it is possible that undiscovered cultural resources are present in the area.

The proposed action includes measures to avoid impacts to the site or any other as yet undiscovered cultural resources. Prior to any earth disturbance, the identified site would be fenced along its boundary under the supervision of an archaeological monitor. The fenced area would be excluded from any disturbance. Initial grading would be observed by an archaeological monitor to ensure avoidance of any undiscovered cultural resources.

Given the employment of exclusion fencing and use of archaeological monitoring, the proposed project is not anticipated to have any impact on cultural resources.

4.1.1.3 Special Status Species

A biological survey of the project area did not identify the presence of any endangered species, but the site provides nesting habitat suitable for the loggerhead shrike, a bird, and foraging habitat for the fringed bat.

Construction and operation of the oil well has the potential to affect special status animal species. The proposed project would remove 2.93 acres of suitable habitat for the above species throughout the life of the proposed project. If the well is not productive, intense impacts would be short term, on the order of 20 days. However, it can take up to a year for vegetation to fully reestablish after reseeding. If the well is productive, this impact would be long term. Activities associated with the construction and drilling phases of the proposed project may present a hazard to endangered species and wildlife in the short term. Specifically, concerns arise from the potential for endangered species to become trapped in the reserve pit.

The proposed action incorporates design features to minimize or eliminate impacts associated with the reserve pit; the reserve pit would be fenced along its perimeter and netted to exclude birds and animals.

Habitat loss resulting from the proposed project would be minimal with respect to the surrounding area. Habitat fragmentation is not likely to be profound given the nature of the endangered species candidates. Given the measures to exclude birds and animals from the reserve pit, impacts to special status species are anticipated to be minimal or non-existent.

4.1.1.4 Migratory Birds

The 2010 Draft RMP documents that the proposed action is located on the eastern periphery of an Avian Species Concentration Area. The Avian Species Concentration Area is associated with the Rio Chama bottoms and serves as a migration corridor for many species of migratory birds. In particular, a biological survey identified habitat suitable for seven species of migratory birds that are considered by BLM to be at conservation risk (see Appendix II).

Impacts to avian species primarily concern the potential for birds to become trapped in the reserve pit. The proposed action incorporates design features to minimize or eliminate impacts associated with the reserve pit; the reserve pit would be fenced along its perimeter and netted to keep birds and animals out.

Habitat loss or fragmentation resulting from the proposed project would be minimal with respect to the surrounding area.

It is likely that birds would simply avoid the project area during construction and utilize other nearby habitat. Given the measures to exclude birds from the reserve pit, impacts to birds are anticipated to be minimal or non-existent as a result of the proposed project.

4.1.1.5 Socioeconomic Effects

Transportation

The proposed action would increase the volume and change the nature of vehicular traffic on the local road system. Preparing the well pad and drilling and completing the well would result in 5-10 round trips per day – three light trucks with project personell and several round trips by heavy equipment – lowboy for the bulldozer, several trucks for the drill rig and well-completion crew, as well as supply trucks. The current public road leading past the location of the proposed action is a gravel-surfaced road maintained for light use. Current traffic in the area is extremely sparse consisting primarily of BLM vehicles and local residents.

The condition of the existing public access road may be inadequate for heavy vehicle access. The BLM recommends that the road be maintained in its current state until the well is drilled and in production. At that point the road may need to be upgraded to better handle service trucks. The lessee would reach agreement with the County regarding its use of the road for well development and well service.

The proposed access road intersects the existing public road at a low point in the public road. This proposed junction has potential to pool water. However, the lessee would take measures to ensure proper drainage from the road surfaces.

The proposed action has been designed to address issues relating to the existing road and new road construction. Affected cattle guards on the existing public road would be removed and replaced with timber construction pads to support construction vehicles. Following construction, the timber construction pads would be removed and the cattle guards re-installed. Two existing cattle guards which are in poor repair would be replaced with new cattle guards. All costs associated with upgrading the roadway and the cattle guards would be borne by the project sponsor. The proposed action has adopted drainage controls for new road construction from the COA. These include features such as turnouts and culverts.

Given the measures to address drainage and the cattle guards, impacts to transportation are anticipated to be low in the short term and possibly beneficial in the long term. Given the infrequent existing traffic volume, no other traffic related impacts are anticipated.

4.1.1.6 Visual Resources

The proposed action is sited on an elevated location overlooking and just south of Nutrias Canyon (see figures 3 and 4). Permanent facilities at this location would tend to be visible from a wide area. According to the Draft RMP, the proposed project is within an area designated as Visual Resource Management (VRM) Class III. Temporary visual impacts would include construction equipment and the drill rig. Long-term visual impacts would include the access road, well pad and production equipment, including tanks to store produced oil.

Visual Resource Management on public land is conducted in accordance with BLM Handbook 8410 and BLM Manual 8411(USDI 2007). Management objectives for Class III designations include that Operators must comply with the visual resource management objectives established in the land use plan for all activities that alter landforms, disturb vegetation, or require structures as outlined in the *Gold Book for Oil and Gas Exploration and Construction* (BLM 8400 Manual Series).

Features prescribed in the proposed action designed to reduce visual impacts include: low profile tanks, painting the well pad equipment so that it blends in to the surrounding landscape and a meandering access road. Given these features, the proposed project is anticipated to be consistent with BLM VRM objectives for the affected area.

4.1.1.7 Wildlife

The proposed project is within an area identified as a big game migration corridor and a big game wintering area, notably for elk and deer. Big game species migrate from summer range in southern Colorado and northern New Mexico to winter in this area. Big game migrations and wintering generally occur from December through to March. During this critical period, even minimal disturbance to big game populations can reduce habitat effectiveness and result in vital energy expenditures. Migrations typically follow patterns defined by the natural landscape. Corridors considered to be especially at risk from disturbances are those that contain narrow topographic or man-made constrictions to herd migration. When these types of corridors are obstructed or impaired, migrating animals can die from starvation and exposure.

Short term impacts to wildlife resulting from proposed action would include: noise, earth disturbance, reserve pit hazards, and traffic activity associated with well site construction and well drilling. Long term impacts associated with production operations include the fragmenting effect of the access road and regular disturbance from service vehicles.

The timing exclusions included in the proposed action prohibits construction and drilling activities from November 1st through March 30th. These exclusions eliminate the most intense short-term impacts to migrating and wintering big game. The proposed action also incorporates design features to minimize or eliminate hazards to wildlife associated with the reserve pit; the reserve pit would be fenced along its perimeter and netted to exclude birds and animals.

The proposed project lies on an expansive and remote elevated plateau (see figure 2), with no notable natural or man-made constrictions to movement. During production operations, migrating or wintering big game would be free to avoid the area and consequently long-term impacts to migrating big game are anticipated to be low.

Impacts to other non-migrating species as a result of the proposed action are anticipated to be low. Based on effects from other well installations, it is thought that in general other wildlife would simply avoid the area during the construction phase of the well.

4.1.2 Alternative B: No Action

4.1.2.1 Air Quality and Noise

Under this alternative there would be no activities that would generate noise or air quality impacts.

4.1.2.2 Cultural Resources

A field survey identified a cultural resource in the vicinity of the project. The site is considered eligible for listing on the National Register of Historic Places, and as such the BLM must consider alternatives to actions that would impair the integrity of the site. However, under this alternative, there would be no impact to the reported archaeological site.

4.1.2.3 Endangered Species

A biological survey of the project area did not identify the presence of any endangered species, but the site provides nesting habitat suitable for the loggerhead shrike, a bird, and foraging habitat for the fringed bat.

Under this alternative, there would be no change to nesting or foraging opportunities.

4.1.2.4 Migratory Birds

The location of the proposed action contains habitat suitable for seven species of migratory birds. Also, according to the Draft RMP, the proposed project is within an area identified as Avian Species Concentration.

Under this alternative, there would be no impacts to migratory birds.

4.1.2.5 Socioeconomic Effects

The current public road leading past the location of the proposed action is a gravel-surfaced road maintained for light use. Under this alternative, there would be no changes in traffic volume and no need to upgrade the public road.

4.1.2.6 Visual Resources

According to the Draft RMP, the proposed project is within an area designated as Visual Resource Management (VRM) Class III.

Under this alternative, there would be no visual impacts.

4.1.2.7 Wildlife

According to the Draft RMP, the proposed project is within an area identified as a big game migration corridor and a big game wintering area, notably elk and deer.

Under this alternative, there would be no activities that would affect big game wintering in the vicinity.

4.2 Cumulative Effects Analysis

A cumulative impact, as defined in 40 CFR 1508.7, is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other action.

4.2.1 Cumulative Actions

4.2.1.1 Past and Present Actions

The consideration of past and present actions did not lead to the identification of relevant cumulative actions when combined with the proposed action.

4.2.1.2 Reasonably Foreseeable Actions

The project area is not presently exploited for oil and gas. If the Nutrias Prospect well is successful it would encourage additional exploration and production activities in the area. This would result in continual construction of new wells over the next years and the attendant effects on environmental resources. However, development and production activities, especially field-wide, are too speculative at the present.

4.2.2 Cumulative Effects

4.2.2.1 Air Quality and Noise

Construction of any additional well sites, especially if they were drilled more than one at a time, would have cumulative noise and air quality impacts. Operation of more wells would also result in more noise and exhaust emissions from pump jacks, and more noise, dust and exhaust emissions from the correspondingly larger fleet of trucks needed to service the wells

4.2.2.2 Cultural Resources

The impacts to cultural resources could be avoided by requiring surveys of project areas prior to construction and avoidance of significant sites during construction and operation of the well sites.

4.2.2.3 Special Status Species

Cumulative effects to endangered species could be minimized by identifying key habitat and excluding it from oil and gas development, and by requiring preconstruction surveys of individual well sites.

4.2.2.4 Migratory Birds

Cumulative effects to migratory birds would need to be evaluated by determining the potential extent of the oil field relative to key habitat of migratory bird species.

4.2.2.5 Socioeconomic Effects

Cumulative effects to the county road system would consist of continually increasing volumes of large vehicles needed to construct and service oil wells in the area, which in turn would require upgrading of existing roadways and the possible construction of new roads. Increased costs to the county would be offset by fees and taxes collected from the oil field operators.

4.2.2.6 Visual Resources

Cumulative visual effects would include the construction of additional access roads and well sites, which would have a long term presence in the landscape. Mitigation measures as stipulated above would diminish but not eliminate the visual effects.

4.2.2.7 Wildlife

The cumulative effects to big game species have the potential to be significant if field-wide development were to occur. This area is a significant migratory and winter range for elk and deer. Key months during which disturbance of the herd must be avoided are January through April. While disturbance related to well drilling can be avoided by prohibiting construction during the critical winter months, the fact that this is an oil field makes disturbance due to oil field operation unavoidable. The well site crude oil tanks and the pumpjacks must be serviced on a frequent basis, which would result in a continual presence of

tank and service trucks throughout the oil field on a year-round basis. The potential effects on wintering elk and deer would be dependent on the size and location of the oil field relative to critical habitat.

Chapter 5: Consultation and Coordination

5.1 Summary of Consultation and Coordination

A meeting was held at the project site between project sponsors and BLM staff on August 5, 2010 in order to better understand how the Nutrias Prospect well project might affect environmental resources. The key issues discussed at the on-site included measures to minimize the visual impact during the operational phase; impacts on the county roads accessing the site, including the need to temporarily replace cattle guards; possible effects on other landowners; possible impacts to listed plant and animal species; and layout of the well site to allow maximum reclamation after the well was in operation. A representative of Rio Arriba County was invited to participate in this on-site but did not attend.

Initial consultation regarding the impact of the project on public roads took place on September 3, 2010, with the Rio Arriba County Roads Department. The Roads Department was also consulted regarding the classification of the county road that accesses the well site on March 17, 2011.

5.2 Summary of Public Participation

This proposal was posted on the BLM New Mexico online NEPA log on October 22, 2010 to inform the public that the preparation of this EA was initiated. A 30-day public review and comment period on the EA is provided upon its preparation.

5.2.1 Public Comments Analysis

This section will be completed following the 30-day public review and comment period.

5.3 List of Preparers

BLM Preparers

Craig Willems, Natural Resource Specialist (Farmington Field Office)
Brad Higdon, Planning and Environmental Coordinator
Greg Gustina, Hydrologist
Valerie Williams, Biologist
Jacob Young, Rangeland Management Specialist
Derek Trauntvein, Rangeland Management Specialist
Paul Williams, Archaeologist
Tami Torres, Recreation Planner

Non-BLM Preparers

Ted Lofstrom and Morgan Covill (Principle Authors)
Ellis & Associates, Inc.
Fourth Street SE, Suite 200
Minneapolis, MN 55414

Max Libby (Technical Writer/Editor)
Ellis & Associates, Inc.

2014 San Juan Blvd., Suite C
Farmington, NM 87401

Phil Norton (Biological)
2014 San Juan Blvd, Suite C,
Farmington, New Mexico 87401

Chapter 6: References

USDI 1988. U.S. Department of the Interior, Bureau of Land Management, October 1988. Taos Resource Management Plan. Taos, New Mexico, BLM-NM-PT-88-021-4410.

USDI 2010. U.S. Department of the Interior, Bureau of Land Management, June 2010. Draft Taos Resource Management Plan and Environmental Impact Statement. Taos, New Mexico, BLM/NM/PL-10-01-1610.

USDI 1990. U.S. Department of the Interior, Bureau of Land Management, November 1990. Rio Chama Management Plan. Albuquerque, New Mexico.

USDI 2008. U.S. Department of the Interior, Bureau of Land Management, October 1988. National Environmental Policy Act Handbook H-1790-1, January, 2008. Available at BLM's Printed Materials and Distribution Section (PMD).

NMBGMR 1968. New Mexico Bureau of Geology & Mineral, 1968. Bulletin-91 – Geology and Mineral Resources of Rio Arriba County, New Mexico. Socorro, New Mexico.

USDI 2007. U.S. Department of Interior, Bureau of Land Management and U.S. Forest Service Department of Agriculture. 2007. Surface Operating Standards and Guidelines for Oil and Gas Exploration and Development, The Gold Book. Denver, Colorado.

NMDGF 2003. New Mexico Department of Game and Fish. Elk Regional Management Information. <http://www.wildlife.state.nm.us/publications/documents/elkregionalmagtdocument.pdf>

ENSR 2005. ENSR International, 2005. Annual Emissions Inventory for BLM Vegetation Treatment Methods - Final Report, April 2005. Bureau of Land Management Contract No. NAD010156 ENSR Document Number 09090-020-610.

NPS 2011. National Park Service, Air Resources Division, 2011. Technical guidance on assessing impacts to air quality in NEPA and planning documents: January 2011. Natural Resource Report NPS/NRPC/ARD/NRR-2011/289. National Park Service, Denver, Colorado

Appendix I: List of Figures

Figure 1: Project Overview

Figure 2: Project Setting

Figure 3: USGS 7.5' Topographic Map

Figure 4: NAIP DOQ Map

Figure 5: USDA SSURGO Soils Map

Figure 6: Quaternary Geology

Figure 7: Slopes in Project Area

Figure 8: FEMA Flood Insurance Rate Map

Appendix II: Biological Survey Report for the Nutrias Prospect Oil Well, Rio Arriba County, New Mexico.

Biological Survey Report for the
Nutrias Prospect Oil Well
Rio Arriba County, New Mexico

Prepared by
Phil Norton, Biologist
Ellis and Associates
2014 San Juan Blvd., Suite C
Farmington, NM 87401
505-326-1730

Prepared for
Bureau of Land Management
Taos Field Office

Introduction

Ellis and Associates conducted a biological field survey and data review for Blue Dolphin's proposed Nutrias Prospect well and proposed well access road. The purpose was to survey and analyze the site for the presence and potential occurrence of special status species listed by the United States Fish and Wildlife Service (USFWS), the Bureau of Land Management (BLM) Taos Field Office, and New Mexico Partners in Flight (NMPIF).

Project Description

The project is located approximately 26 miles southsouthwest of Chama, New Mexico in Rio Arriba County on lands owned and managed by the BLM. The purpose of the project is to construct an oil well pad with an access road for Blue Dolphin Production LLC. It is situated in the NE $\frac{1}{4}$ of Section 35, T27N, R2E. The proposed well pad is centered on 500' from North and 335' from East at Lat.36.5361322' N and Long.106.6899876' W. The proposed well pad is 250' X 250' (250' X 250' = 1.43 acre). An access road 50' X 1310' would be constructed from an existing road to the well pad (50' X 1310' = 1.50 acre). Total area of disturbance will be 2.93 acres. Disturbance levels are expected to be severe with mechanical blading, leveling and drilling. Native vegetation will be removed from the well pad and access road.

Methodology

Prior to the field survey, a list of protected and sensitive species with potential to occur in Rio Arriba County, New Mexico was assembled from examination of the Biota Information System of New Mexico (BISONM2005) and New Mexico Rare Plant Technical Council (NMRPTC 2005) websites. Habitat types and suitability for protected and sensitive species listed by the USFWS, BLM and NMPIF, with potential to occur in Rio Arriba County were reviewed prior to fieldwork.

Phil Norton, Ellis and Associates biologist, surveyed the site on July 13 and again on August 5, 2010. The project site was examined by walking it in parallel transects spaced no more than twenty to twenty five feet apart. A buffer zone of fifty feet around all sides of the pad and road was included. Presence or absence of any one species was determined based on actual sightings of individuals, observations of tracks, burrows, scat or a determination based on actual preferred or occupied habitat. Conditions were warm and sunny with gentle breezes during the survey. Botanical keys consulted for species identifications include: Flowering Plants of New Mexico (Robert Ivey 2003); Endangered, Threatened and Sensitive Plant Field Guide (BLM, Albuquerque and Taos Field Office 1998); and Trees and Shrubs of New Mexico (Jack Carter 1997). Bird species identifications were verified visually with referencing the Sibley Guide to Birds (Sibley 2000). A variety of other specialized resources were utilized for identification as needed.

Environmental Setting

Elevation of the proposed project area is 7222 ft. above mean sea level. The project is in level to rolling terrain. The area drains into arroyos before flowing into the Chama River, which is about 2 miles to the west. The arid desert climate averages 13 to 16 inches of annual precipitation with a frost-free period of 100 to 130 days and an average annual temperature of 45 to 49 degrees F. The proposed site is located within the Elpedro silt loam soil type. The Elpedro silt loam soil is well drained, has a slope of 1 to 5 percent, and is located on the footslope of hills and fan remnants. It is old alluvium derived from sandstone and shale.

Plant Communities

The project area is characterized by Great Basin desert scrub on hills, slopes, and some valley bottom settings, while patches of desert grassland occur in the valley bottoms where soil texture tends to be finer and water tends to pool following major precipitation events. The canopy of the desert shrub vegetation is dominated by big sagebrush. Scattered plants of Riddell's groundsel and pinque bitterweed occur throughout the area as well. The ground cover stratum is dominated by blue grama and crested wheatgrass. Current land use in the vicinity consists of wildlife habitat and livestock grazing.

Wildlife

Wildlife is abundant and diverse throughout the area. A wide range of large and small mammals can be found, including the big game species Rocky Mountain elk, mule deer, black bear, and mountain lion, as well as skunk, fox, coyote, bobcat, turkey, squirrels, chipmunks, gophers, various mice and rat species, cottontail and jackrabbit. Avian species are varied and include, among others, crows and ravens, redtailed hawk, prairie falcon, mountain bluebird, robin, juncos, blackbilled magpie, and mountain chickadee. Various reptiles, amphibians and insects can also be found in this habitat. The area where the project is proposed is an important winter range for elk and deer. Disturbance during the critical months of December – March can reduce the habitat effectiveness and the resulting harassment can result in tremendous energy costs in a severe winter.

Threatened, Endangered and Species of Concern

This section evaluates the potential for protected and sensitive species listed by the USFWS and BLM to occur at the project site. Collectively they have identified 37 specific species that are known or suspected to occur in the vicinity for the project area.

Group: Birds

American peregrine falcon *Falco peregrinus anatum*

USFWS – Species of Concern BLM – Sensitive

Habitat: Nests on cliffs usually within wooded and forested habitats with openings, often near riparian zones

Likelihood of Occurrence: Not present, no habitat

Arctic peregrine falcon *Falco peregrinus tundrius*

USFWS – Species of Concern

Habitat: Occasional migrant in NM; breeds in North America arctic tundra, wintering along coasts from Gulf Coast to Baja and into South America

Likelihood of Occurrence: Not present, no habitat

Baird's sparrow *Ammodramus bairdii*

USFWS – Species of Concern BLM – Sensitive

Habitat: Rarely reported migrant in New Mexico found mainly on the eastern plains and southern lowlands. It occupies habitat of undisturbed or reclaimed grass prairies with scattered shrubs.

Likelihood of Occurrence: Because of its rare migratory presence in New Mexico and the lack of adequate habitat at the proposed site, Baird's sparrow would be unlikely to occur.

Black tern *Chlidonias niger*

USFWS – Species of Concern BLM – Sensitive

Habitat: Nests in vegetation of marshes with some open water on prairies, rare migrant in New Mexico.

Likelihood of Occurrence: Not present, no habitat

Mountain plover *Charadrius montanus*

USFWS – Proposed

Habitat: Occurs in arid grassland habitat, particularly in areas disturbed by prairie dogs and livestock

Likelihood of Occurrence: Habitat suitable for the Mountain plover does not occur at the project site.

Northern goshawk *Accipiter gentiles*

USFWS – Species of concern BLM – Sensitive

Habitat: Mature and uneven aged mixed conifer forest, often in shady and deep canyons

Likelihood of Occurrence: Not present, no habitat

Ferruginous hawk *Buteo regalis*

BLM – Species of Concern

Habitat: Preferred habitat includes open prairie, arid grasslands, brushy open country, and badlands.

Likelihood of Occurrence: Suitable habitat occurs within and adjacent to the project site although nest are notably lacking. None were observed during the survey.

White-faced ibis *Plegadis chihi*

BLM – Sensitive

Habitat : This species breeds colonially in marshes, usually nesting in bushes or low trees. Its breeding range extends from the western USA south through Mexico, as well into South America. its winter range extends from the southern US south to include the rest of its breeding range.

Likelihood of Occurrence: Habitat suitable for the white-faced ibis does not occur at the project site.

Western burrowing owl *Athene cunicularia hypugea*

USFWS – Species of concern BLM – Sensitive

Habitat: Underground burrows in open grasslands or on agricultural land

Likelihood of Occurrence: Habitat suitable for the Western burrowing owl does not occur at the project site.

Yellow-billed cuckoo *Coccyzus americanus*

USFWS – Candidate for listing

Habitat: Typically over winters in mature tropical forests and returns to the U.S. for nesting. Inhabits closed-canopy broad-leaved forest adjacent to river bottoms.

Likelihood of Occurrence: Habitat suitable for the yellow-billed cuckoo does not occur at the project site.

Bald eagle *Haliaeetus leucocephalus*

BLM – Sensitive

Habitat: The bald eagle typically breeds in old-growth forests adjacent to water. It is not known to breed in the area of the proposed project, however, it may use it occasionally as a winter foraging site.

Likelihood of Occurrence: Because of the dry habitat of the proposed site, the foraging value of the area for bald eagle would be very limited, thus bald eagle use would be very low.

Southwestern willow flycatcher *Empidonax traillii extimus*

USFWS – Endangered

Habitat: Occurs in riparian habitats along rivers, streams, or other wetlands with dense, multi-layered growth of willows or other shrubs and medium sized trees.

Likelihood of Occurrence: Habitat suitable for the Southwestern willow flycatcher does not occur at the project site.

Least tern *Sterna antillarum*

USFWS – Endangered

Habitat: The Interior least tern breeds along coastal beaches and interior waterways. It nests on the ground, typically on sites that are sandy and relative free of vegetation such as sandbars in rivers.

Likelihood of Occurrence: The proposed site does not support the habitat necessary for the least tern.

Loggerhead shrike *Lanius ludovicianus*

BLM – Sensitive

Habitat: Breeds through much of the US and southern Canada and winters in New Mexico.

Likelihood of Occurrence: It is found in the desert shrub grassland habitat within the area, however none were seen during the survey.

Mexican spotted owl *Strix occidentalis lucida*

USFWS – Threatened

Habitat: Preferred habitat is generally restricted to forest mountain ranges and deep canyons. It has a strong affinity for old growth or completely structured forests.

Likelihood of Occurrence: Habitat suitable for the Mexican spotted owl does not occur at the project site.

Group: Arthropod – Invertebrate

New Mexico Silverspot butterfly *Speyeria Nokomis nitocris*

USFWS – Species of concern

Habitat: Occurs in wet meadows, pond edges, grassy spring areas, usually in mountain or canyon terrain adjacent to P-J woodlands

Likelihood of Occurrence: Not present, no habitat

Group – Fish

Rio Grande cutthroat trout *Oncorhynchus clarki virginalis*

USFWS – Candidate

Rio Grande silvery minnow *Hybognathus amarus*

USFES - Endangered

Rio Grande sucker *Catostomus plebius*

USFWS – Species of concern

Roundtail chub *Gila robusta*

USFWS – Species of concern BLM – Sensitive

Flathead chub *Platygobio gracilis*

BLM – Sensitive

Habitat: All four species of fish occupies river systems.

Likely of Occurrence: Not present- no habitat

Group – Mammal

Black-footed ferret *Mustela nigripes*

USFWS – Endangered

Habitat: Grassland plains, desert grasslands, and desert scrub where it occurs in association with prairie dog towns. At a minimum, the black-footed ferret requires prairie dog towns of at least 200 or more acres for the white-tailed prairie dog for suitable reproductive habitat.

Likelihood of Occurrence: Habitat suitable for the black-footed ferret does not occur at the project site.

Townsend's big-eared bat *Corynorhinus townsendii*

USFWS – Species of concern BLM – Sensitive

Habitat: Roost and hibernates in caves, rock shelters, and mines and is limited by the presence of suitable shelters.

Likelihood of Occurrence: Suitable habitat is not present.

Big free-tailed bat *Nyctinomops macrotis*

BLM – Sensitive

Habitat: This species occurs mainly in the southwestern US. It prefers rocky and woodland habitats, where roosting occurs in caves, mines, old buildings, and rock crevices.

Likelihood of Occurrence: Suitable habitat is not present.

Fringed bat *Myotis thysanodes*

BLM – Sensitive

Habitat: Fringed bats occur in a variety of habitats from desert-scrub to fir-pine associations. Oak and pinyon woodlands appear to be the most commonly used vegetations. Roost sites may be in caves, mines, and buildings.

Likelihood of Occurrence: The desert scrub habitat at the project site may be used by foraging bats, but its use is thought to be minimal.

Long-eared myotis bat *Myotis evotis*

BLM – Sensitive

Habitat: The long-eared bat inhabits most of western North America south into Mexico. This species primarily inhabits coniferous forest and woodland, including juniper, ponderosa pine and spruce-fir.

Likelihood of Occurrence: Suitable habitat is not present.

Long-legged myotis bat *Myotis volans*

BLM – Sensitive

Habitat: The long-legged bat occurs over much of the western US. They are primarily forest inhabitants, and they prefer high open woods and mountainous terrain. Nursery colonies may be in such places as buildings, cliff crevices, and hollow trees.

Likelihood of Occurrence: Suitable habitat is not present.

Western small-footed bat *Myotis ciliolabrum*

BLM – Sensitive

Habitat: The Western small-footed bat is found through out the Western US. It is usually found in arid habitats where it is associated with cliffs, talus fields, and in the prairies, with clay buttes and steep riverbanks. This species roosts primarily in rock faces and clay banks.

Likelihood of Occurrence: Suitable habitat is not present.

Yuma myotis bat *Myotis yumanensis*

BLM – Sensitive

Habitat: The Yuma bat ranges across the western third of North America. It occurs in a variety of habitats riparian, and scrublands, deserts, and forests. They roost in bridges, cliff crevices, caves, mines, and trees.

Likelihood of Occurrence: Suitable habitat does not occur at the project site.

Spotted bat *Euderma maculatum*

BLM – Sensitive

Habitat: The spotted bat ranges throughout the western US. It is distributed in a fairly broad and extremely patchy area and highly associated with prominent rock features. Most of its foraging is associated with riparian habitats. They prefer to roost on rock-faced cliffs.

Likelihood of Occurrence: Suitable habitat does not occur at the project site.

New Mexico jumping mouse *Zapus hudsonius leteus*

USFWS- Species of concern BLM – Sensitive

Habitat: The New Mexico meadow jumping mouse is restricted to mesic habitat. It prefers permanent streams, moderate to high soil moisture, and dense and diverse streamside vegetation consisting of grasses, sedges, and forbes.

Likelihood of Occurrence: The project area does not contain habitat suitable for the NM jumping mouse.

Southwestern river otter *Lutra Canadensis sonorae*

USFWS – Species of Concern

Habitat: The southwestern river otter occupies habitat of perennial streams and rivers that are not found in the project area.

Likelihood of Occurrence: Not present, no suitable habitat.

Goat Peak pika *Ochotona princes nigrescens*

USFWS – Species of Concern

Habitat: The Goat Peak pika lives in rocky areas such as talus or boulder-strewn slopes above timberline at elevations from 8,000 to 13,000 feet above mean sea level.

Likelihood of Occurrence: The proposed project area lacks the high altitude rocky areas favored by the species.

Gunnison's prairie dog *Cynomys gunnisoni*

BLM – Sensitive

Habitat: Gunnison's prairie dog is found in grassland and shrub-steppe habitat at elevations ranging from semi-desert to montane. The species is found in montane grassland, juniper savanna, plains-mesa grassland, Great Basin desert scrub, plains-mesa sand scrub, desert grassland vegetation in New Mexico, as well as in urban and cultivated areas.

Likelihood of Occurrence: No prairie dog burrows were observed near the proposed project.

Group – Amphibians

Boreal western toad *Bufo boreas boreas*

USFWS – Species of concern

Habitat: This species lives in high elevation lakes, slow-moving streams, and marshy areas.

Likelihood of Occurrence: The dry habitat of the proposed project area cannot support the species.

Jemez Mountains salamander *Plethodon neomexicanus*

USFWS – Species of Concern BLM – Sensitive

Habitat: This species lives in a coniferous forest habitat that is moist.

Likelihood of Occurrence: The dry habitat of the proposed project area cannot support the species.

Group - Plants

Ripley's milkvetch *Astragalus ripleyi*

USFWS – Species of Concern BLM – Sensitive

Habitat: Ripley's milkvetch is commonly found in sagebrush, pinon-juniper woodland, and Gambel's oak thickets in ponderosa pine forest

Likelihood of Occurrence: This species could be found in habitat that the proposed project is located in, but no plants were located during the survey.

Arizona willow *Salix arizonica*

USFWS – Species of Concern

Habitat: The Arizona willow is commonly found on sedge meadows and wet drainage ways in subalpine coniferous forest.

Likelihood of Occurrence: Habitat suitable for this species is not

located in the project area.

Migratory Birds

Under the Migratory Treaty Act and Executive Order 13186, federal agencies are required to consider impacts to migratory birds from management activities. In keeping with this mandate, the BLM has consulted avian conservation plans to identify species at greater conservation risk based on threats to the species or their habitats. These plans include:

- *Fish and Wildlife Service Birds of Conservation Concern
- *New Mexico Dept. Game and Fish Species of Greatest Conservation Need
- *New Mexico Bird Conservation Plan

Together they have identified 183 species of migratory birds of management concern that occur in New Mexico. Of these 85 species are known to occur in Rio Arriba County. Based on the habitat type that the proposed project is located in, I judged that 7 species could be expected to occur in the proposed project area. Other species that are on the list have already been covered in the Threatened and Endangered Section. The potential for the 7 identified species to occur at the proposed project site is evaluated below.

Golden eagle *Aquila chrysaetos*

Habitat: Most common nesting areas in New Mexico are steep-walled mountain canyons. Golden eagles typically forage in open grassland or shrubland habitat adjacent to the nest site.

Likelihood of Occurrence: Golden eagles could forage in the project area, but its use would be very minor.

Say's Phoebe *Sayornis saya*

Habitat: Inhabits open terrain where occasional shrubs, rocks, fence posts, and wires provide hunting perches and cover. For nesting, they require support-providing ledges that are sheltered from the sun.

Likelihood of Occurrence: Say's phoebe were seen in the vicinity of the proposed project and probably use the site for foraging, but its use would be very minor.

Sage Thrasher *Oreoscoptes montanus*

Habitat: The sage thrasher is a sagebrush-obligate species of the western United States, reaching the southern limit of its distribution in north-west New Mexico. They breed in shrub-steppe dominated by big sagebrush. For the winter they migrate to the southern US and Mexico.

Likelihood of Occurrence: Sage thrasher or their nests were not observed in the project area.

Brewer's Sparrow *Spizella breweri*

Habitat: Brewer's sparrows breed in the Western US in plains and foothills, primarily in the Great Basin, but as far south as northern New Mexico. They are closely associated with sagebrush, preferring dense stands broken up with grassy areas.

Likelihood of Occurrence: Brewer's sparrows could use the project site for nesting, but its use would be very minor. No birds or their nests were observed during the survey.

Sage sparrow *Amphispiza belli*

Habitat: Sage sparrow is a widespread breeder in shrub-steppe habitats from the northern edges of the Great Basin south to northern Arizona and New Mexico. In New Mexico, it breeds in the northwest quadrant of the state. In winter, it moves to the southern part of the state. Sage sparrows in New Mexico tend to occupy pure stands of big sagebrush, or areas with sagebrush interspersed with saltbush, rabbitbrush, or greasewood.

Likelihood of Occurrence: Sage sparrows could occur in the project area, but its use would be very minor. No birds or their nest were observed during the survey.

Vesper sparrow *Pooecetes gramineus*

Habitat: Vesper sparrow breed in much of southern Canada south to Northern New Mexico and Arizona. They prefer dry, open areas with short, sparse and patchy vegetation. In winter they move to the southern US and Mexico.

Likelihood of Occurrence: Vesper sparrows could occur in the project area, but its use would be very minor. No birds or their nest were observed during the survey.

Loggerhead shrike *Lanius ludovicianus*

Habitat: In New Mexico, this species is associated with open country with short vegetation, including desert grasslands, shrublands and open woodlands or juniper savannahs. Breeding territories are often centered around isolated trees or large shrubs.

Likelihood of Occurrence: Loggerhead shrikes occur in the vicinity of the proposed project site, however no birds or their nests were observed during the site survey.

The proposed project would result in limited habitat loss and fragmentation for avian species associated with sagebrush/grasslands. Direct impacts to these species would be greater if construction occurs during the breeding season (May-August), when nest lost if possible. Additionally, noise and human disturbance may cause some nest

abandonment in adjacent areas. Because of the limited suitable habitat and since the project is fairly small, involving less than 3.0 acres, it is felt that the effect on migratory birds would be very limited.

Certification Statement

I, Philip W. Norton, hereby certify that I conducted the Biological Evaluation for the Blue Dolphin's Nutrias Prospect well on the date indicated and that the report is accurate to the best of my knowledge.

August 9,2010

Philip W. Norton

Date

Plant List for Nutrias Prospect Project Site and vicinity Rio Arriba County, New Mexico July 13 and August 5, 2010

Tumbleweed	<i>Salaola tragus</i>
Fendler globe mallow	<i>Sphaeralcea fendleri</i>
Stickseed	<i>Hackelia floribunda</i>
Pinque bitterweed	<i>Hymenoxys richardsonii</i>
Riddel's groundsel	<i>Senecio riddellii</i>
Broom snakeweed	<i>Gutierrezia sarothrae</i>
Salsify	<i>Tragopogon porrifolius</i>
Red-stem filaree	<i>Erodium cicutarium</i>
Big sagebrush	<i>Artemisia tridentata</i>
Fringed sage	<i>Artemisia frigida</i>
Tansy mustard	<i>Descurainia obtuse</i>
Plains prickly pear	<i>Opuntia polyacantha</i>
Redroot buckwheat	<i>Eriogonum racemosum</i>
Wooly plaintain	<i>Plantago patagonica</i>
Galleta	<i>Hilaria jamesii</i>
Creasted wheatgrass	<i>Agropyron desertorum</i>
Indian paintbrush	<i>Castilleja integra</i>
Indian rice grass	<i>Achnatherum hymenoides</i>
Blue grama	<i>Bouteloua gracilis</i>
Cheatgrass	<i>Bromus tectorum</i>

Animal List for Nutrias Prospect Project site and Vicinity
Rio Arriba County, New Mexico
July 13 and August 5, 2010

Red-tailed hawk	<i>Buteo jamaicensis</i>
Prairie falcon	<i>Falco mexicanus</i>
Common raven	<i>Corvus corax</i>
Mourning dove	<i>Zenaida macroura</i>
Western meadowlark	<i>Sturnella neglecta</i>
Horned lark	<i>Eremophila alpestris</i>
Mountain bluebird	<i>Sialia currucoides</i>
Northern flicker	<i>Colaptes auratus</i>
Rocky Mountain elk	<i>Cervus canadensis</i>
Mule deer	<i>Odocoileus hemionus</i>
Coyote	<i>Canis latrans</i>
Black-tailed jackrabbit	<i>Lepus californicus</i>
Short-horned lizard	<i>Phrynosoma douglassi</i>
Fence lizard	<i>Sceloporus occidentalis</i>



Nutrias Prospect well site



Proposed right-of-way for access road for Nutrias Prospect well

Appendix III: C-102 Documents: Project Plat Map, Drawings and Plans

Appendix IV: BLM Conditions of Approval for the Nutrias Prospect Oil Well

Operator:
Well Name:
Legal Location:

Blue Dolphin Production LLC
Nutrias Prospect
500' FNL, 335' FEL, Section 35, T
27 N, R 2 E
NM

NEPA Log Number:
Inspection Date: 8/5/10
Lease Number: NMNM-116554

Conditions of Approval

The following conditions of approval will apply to the Blue Dolphin, Nutrias Prospect well pad, access road, and other associated facilities, unless a particular Surface Managing Agency or private surface owner has supplied to Bureau of Land Management and the operator a contradictory environmental stipulation. The failure of the operator to comply with these requirements may result in the assessment of liquidated damages or penalties pursuant to 43 CFR 3163.1 or 3163.2.

Special Stipulations

- 1. Copy of Plans:** A copy of these stipulations, including exhibits and the Plan(s) of Operation (if required), shall be at the project area and available to persons directing equipment operation.
- 2. BMP:** Farmington Field Office established environmental Best Management Practices (BMP's) will be followed during construction and reclamation of well site pads, access roads, pipeline ties, facility placement or any other surface disturbing activity associated with this project. Bureau wide standard BMP's are found in the Gold Book, Fourth Edition-Revised 2006. Farmington Field Office BMP's are integrated into the general and site specific stipulations described below.
- 3. Cultural Resources:** No Cultural resources are present within the immediate project area. See Cultural Resource Record of Review, BLM Report Number _____ for site specific stipulations.
- 4. Wildlife Special Designated Areas:** The Blue Dolphin, Nutrias Prospect well pad access road and pipeline is located in a Big Game Winter Closure. No construction, drilling or completion activities are permitted from 11/1 through 3/30.
- 5. Low Profile Equipment:** Low Profile Equipment will be required due to the VRM.
- 6. Noise Sensitive Area:** This well is located within a designated Noise Sensitive Area (NSA). Noise standards of 48.6 dB(A) Leq will be achieved at established agency receptor points. Receptors may vary in size from a single point source to several acres based on the features and resource components that are being managed. The agency will work with the operator to establish the applicable receptor points. If a compressor or pump-jack will be placed on site, a 48.6 dB[A] Leq, or lower, noise level will be enforced at designated receptor points. The operator is required to file a sundry notice within 5 days of setting a compressor or pump-jack on location, if the noise source exceeds the noise standard. Suitable mufflers should be installed on all internal combustion engines and compressor components and/or employ the use of sound barriers or sound-insulated buildings.

Sundry Notice: The sundry notice will include information on why the compressor is needed, the estimated time the compressor will be in use, and the manufacturer's data (size of unit, horsepower, model type and type of motor). A 1:24,000 (7.5 minute series) map will be submitted with the sundry. The map will show the proposed compressor location and all noise sensitive areas (fee surface, residences, schools, churches, farms, known ACECs and SMAs, etc.) within a

two-mile radius of the well location. In addition, a 24 hour time weighted average background noise survey may be required.

- 7. Existing Access:** The existing access road has several cattle guards that may need to be removed to allow the rig and equipment through. The private land owners and livestock grazing permittees will need to be notified of any such construction or disturbance, as well as the BLM AO.
- 8. Turnouts:** Turnouts will be placed along the access road from the County Road, at a maximum placement of every 1000 feet as appropriate, as to drain off storm water and prevent erosion.
- 9. Cut and Fill Slopes:** The interim/final cut and fill slope shall grade as close to the original contour as possible. To obtain this ratio, pits and slopes shall be back sloped into the pad during interim reclamation.
- 10. Diversion:** A diversion will be placed above the cut from Corner #3 flowing around Corner #5 and then into a silt trap at Corner #6.
- 11. Culverts:** Culverts of sufficient size (24" minimum) will be placed where drainages cross access. Silt traps will be built upstream of all culvert locations.
- 12. Pits:** Pits will be lined with an impervious material at least 12 mils thick. If base rock might puncture the liner, a suitable bedding material of sand, clay or felt liners should be placed underneath the liner prior to installation. Mud and blow pits will be constructed so as not to leak, break or allow discharge of liquids or produced solids. At least half of the capacity of the reserve pit must be in cut, with preferably all of the pit located entirely in cut material. The top of the outside wall of reserve pit should be smoothed-off with a minimum of one blade width. The pit should have adequate capacity to maintain 2 feet of free board. Pits are not to be located in natural drainages. Pit walls are to be "walked down" by a crawler type tractor following construction and prior to usage. Any visible or measurable layer of oil must be removed from the surface of the pit after drilling and completion, and the pit must be reasonably kept free of oil accumulations thereafter.
- 13. Equipment Placement:** Production, cathodic equipment, and meter runs associated with pipeline construction shall be placed on location near tear drop road as not to interfere with reclaiming the cut and fill slopes to their proper ratio. Gas metering equipment shall face to the interior of the well pad to provide easy access to equipment from the driving surface. If equipment is found to interfere with the proper reclamation of the slope, the company will be required to move the equipment so proper re-contouring can occur.
- 14. Painting of Equipment:** Within 90 days of installation, all above ground structures not subject to safety requirements shall be painted by the Holder to blend with the natural color of the landscape. A reflective material may be used to reduce hazards that may occur when such structures are near roads. Otherwise, the paint use shall be a non-glare, non-reflective, non-chalking color approved by Taos Field Office.
- 15. Emission Control Standard:** Compressor engines 300 horsepower or less used during well production must be rated by the manufacturer as emitting NOx at 2 grams per horsepower hour or less to comply with the New Mexico Environmental Department, Air Quality Bureau's guidance.

General Conditions of Approval

The following general stipulations apply to the Blue Dolphin, Nutrias Prospect well including, but not restricted to the well pad, access road, and other associated facilities. Site specific stipulations for the access road and pipeline are presented after these general project stipulations.

- 1. Pit Closure:** The operator or his contractor will contact the Bureau of Land Management, Farmington Field Office, Environmental Protection Staff, (505) 599-8900, 48 hours prior to any reclamation efforts associated with this project.
 - a.** Reserve pits will be closed and rehabilitated 90 days after completion or 120 days from the well spud date. All reserve pits remaining open after the 90 days will need written authorization of the Authorized Officer from the Farmington Field Office. This requirement is addressed in the General Requirements in Onshore Order #7.
 - b.** Liquids in pits will be allowed to evaporate, or be properly disposed of, before pits are filled and re-contoured. The AO will be notified 24 hours prior to fluid hauling. Under no circumstances will pits be cut and drained. Aeration of pit fluids must be confined within pit area. Upon completion of the well the reserve pit will be covered with screening or netting and remained covered until the pit is reclaimed.
 - c.** Prior to closing the pit, any plastic material used to line the pits will be removed to mud level before the pits are covered. The excess liner will be hauled to a licensed disposal area. The final grade of reserve pit (after reclamation) shall allow for drainage away from pit area.
- 2. Reclamation:** The operator or their contractor will contact the Bureau of Land Management, Farmington Field Office, Environmental Protection Staff, (505) 599-8900, 48 hours prior to any reclamation efforts associated with this project.
- 3. Threatened, Endangered or Sensitive Species:** If, in operations the operator/holder discovers any T&E / Sensitive species, then work in the vicinity of the discovery will be suspended and the discovery promptly reported to the BLM T&E specialist @ (575) 751-4716. BLM will then specify what action is to be taken. Failure to notify the BLM about a discovery may result in civil or criminal penalties in accordance with the Endangered Species Act (as amended).
- 4. Nesting:** If a bird nest containing eggs or young is encountered in the path of construction the operator will cease construction and consult with the BLM T&E Specialist (575) 751-4716 to determine appropriate actions.
- 5. Noxious weeds:** The holder is responsible for weed control and selective control of invasive weeds on areas proposed to be disturbed, areas disturbed during construction or other activities, and reclaimed areas within the limits of the well pad, access road, pipeline right-of-way and other related project activities (i.e., cattleguards). Noxious weeds are those listed on the New Mexico Noxious Weed List. The following noxious weeds have been identified as occurring on lands within the boundaries of the Taos Field Office (TFO).

Knapweed (*Centaurea repens*), Musk Thistle (*Carduus nutans*), Bull Thistle (*Cirsium vulgare*), Canada Thistle (*Cirsium arvense*), Scotch Thistle (*Onopordum acanthium*), Hoary Cress (*Cardaria draba*), Perennial Pepperweed (*Lepidium latifolium*), Halogeton (*Halogeton glomeratus*), Russian Spotted Knapweed (*Centaurea maculosa*), Dalmation Toadflax (*Linaria genistifolia*), Yellow Toadflax (*Linaria vulgaris*), Camelthorn (*Alhagi pseudalhagi*), African Rue (*Peganum harmala*), Saltcedar (*Tamarix spp.*), Diffuse Knapweed (*Centaurea diffusa*)

and Leafy Spurge (*Euphorbia esula*)

- a. Areas within the proposed project will be inventoried for the presence of noxious weeds. Identified weeds will be treated prior to new surface disturbance.
 - b. Construction equipment will be inspected and cleaned prior to coming onto the work site to remove noxious weed plants and seeds. This is especially important on vehicles from out of state or if coming from a weed infested area. If fill dirt or gravel will be required, the source shall to be certified noxious weed free.
 - c. The well pad, access road, pipeline and related facilities will be monitored for the life of the project for the presence of noxious weeds (includes maintenance and construction activities). If weeds are found, the Taos Field Office Weed Coordinator will be notified at (575) 751-4712 and the coordinator will determine the best method for the control of the particular weed species.
- 6. Pesticides and Herbicide Use:** Use of pesticides and herbicides will comply with applicable federal/state laws. Pesticides and herbicides will only be used in accordance with their registered uses and within limitations imposed by the Secretary of the Interior. A written plan showing the type and quantity of material to be used, pest(s) to be controlled, method of application, location of storage and disposal of containers, and any other information deemed necessary will be approved by the Authorized Officer(AO) prior to the use of pesticides. Emergency use of pesticides shall be approved in writing by the AO prior to use.
- 7. Air Quality** All air pollutant emissions from federally conducted or approved activities shall comply with all applicable local, state, tribal, and federal air quality laws, statutes, regulations, standard and implementation plans.
- 8. Weather:** No construction or routine maintenance activities shall be performed during periods when the soil is too wet to adequately support construction equipment. If such equipment creates ruts in excess of 6 inches deep, the soil shall be deemed too wet.
- 9. Top Soil:** Minimize topsoil removal to reduce surface disturbance. Mow vegetation where possible. Only excavate where necessary. The top 6 inches of soil material will be stripped and stockpiled in the construction zones approved in the APD [construction zones may be restricted or deleted to provide resource avoidance]. The stockpiled soil will be free of brush and tree limbs, trunks and roots. Stockpiled soil should be located in an area protected from vehicular disturbance and covered and protected so wind and water erosion are minimized, or revegetated to prevent erosion and maintain biological viability. The stockpiled soil material will be spread on the reclaimed portions of the pad [including the reserve pit, cut and fill slopes] prior to re-seeding. Spreading shall not be done when the ground or topsoil is frozen or wet.
- 10. Storage Facility Berms:** Berms or firewalls will be constructed around all storage facilities sufficient in size to contain the storage capacity of tanks, or the combined capacity of tanks if a rupture could drain more than one tank. Berm walls will be compacted with appropriate equipment to assure proper construction. All chemicals should be placed within secondary containment structures that are not in contact with soil or standing water.
- 11. Unguarded Pit Fencing:** All unguarded pits (reserve/production/blow pits) containing liquids will be fenced with woven wire. Drilling pits will be fenced on three sides and once the rig leaves location, the fourth side will be fenced. All fencing must be a legal fence in accordance with New Mexico State Law. Use non reflective or galvanized fencing material.
- 12. Hazardous Waste:** All fluids (i.e. scrubber cleaners) used during washing of production equipment, including compressors, will be properly disposed of to avoid ground contamination or hazard to livestock or wildlife.
 - a. Compressor units not equipped with a drip pan for containment of fluids shall be lined

with an impervious material at least 8 mils thick and surrounded by a 12 inch berm.

- b. All open top permanent production or storage tanks regardless of diameter made of fiberglass, steel, or other material used for the containment of oil, condensate, produced water and or other production waste shall be screened, netted or otherwise covered to protect migratory birds and other wildlife from access.

13. Seeding: All disturbed areas, except for the access road driving surface and shoulders and well pad inside of the anchors, will be seeded. Seed mixtures used must be certified weed free. There will be no primary or secondary noxious weeds in seed mixture. Seed labels from each bag will be available for inspection while seed is being sown.

The seed mixture should be:

western wheatgrass 25%
big sagebrush (wyoming) 5%
galleta 15%
Indian ricegrass 10%
needleandthread 10%
fourwing saltbrush 5%
redroot buckwheat 4%
globemallow 3%
paintbrush 3%

14. Time Frame: Disturbed areas will be re-contoured and re-seeded within 120 days of final construction. The timeframe may be extended on a case-by-case basis with AO approval. Seeding will be repeated if a satisfactory stand is not obtained as determined by the AO upon evaluation after the second growing season.

15. Seeding Techniques: Before seeding compacted areas will be ripped to a depth of 12" and disked to a depth of six inches. Edges of re-contouring and re-seeding must be scalloped and feathered to avoid straight lines. Leave a rough texture on reclamation, using rock and dead vegetation to camouflage disturbance. A disk-type drill with two boxes for various seed sizes will be used. The drill rows will be eight to ten inches apart and seed planted one-half inch to one inch deep. A drag, packer or roller will follow the seeder to ensure uniform seed coverage and adequate compaction. Drilling will be done on the contour where possible, not up and down the slope. Where the slope is too steep for contour drilling a "cyclone" hand seeder or similar broadcast seeder will be used. Seed will be covered to the depth described above by whatever means is practical, i.e. hand raked. If the seed is not covered, the prescribed seed mixture amount (pounds/acre/PLS) will be doubled.

16. Paleontology or Cultural Specially Designated Area: Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the Holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. AN evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The Holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the Holder.

17. Authorized Use: All activities associated within the construction, use/operation, maintenance, and abandonment or termination of the Blue Dolphin, Nutrias Prospect is limited to areas approved in the APD. All roads on public land must be maintained in good passable condition year round.

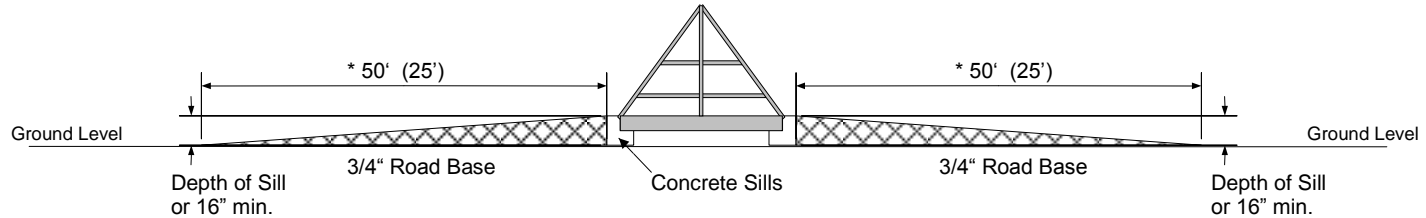
- 18. Public Access:** Public access will not be restricted without specific written approval being granted by the AO. Gates or cattle-guards on the public land will not be locked or closed to public use unless specifically determined by the AO.
- 19. Land Farming:** No excavation, remediation or closure activities will be authorized without prior approval on any federal or Indian mineral estate, federal surface or federal ROW. A Sundry Notice (DOI, BLM Form 3160-5) must be submitted with an explanation of the remediation or closure plan for on-lease actions.
- 20. Site Condition:** Well area and lease premises will be maintained in a workmanlike manner and sanitary condition with due regard to safety, conservation and appearance at all times. A regular maintenance program shall include.
- 21. Waste Disposal:** Waste materials produced during all phases of operation will be disposed of promptly in an approved manner so it will not impact the air, soil, water, vegetation or animals. "Waste" means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes and equipment. All liquid waste, completion fluids and drilling products associated with oil and gas operations will be contained and then removed and deposited in an approved disposal site. Portable toilets will remain on site throughout well pad construction, drilling and reclamation.
- 22. Fences and Existing Improvements:** Disturbance to existing fences and other improvements on public land will be minimized and will be promptly repair to at least their former state. Their functional use will be maintained at all times. The owner of any improvement will be contacted prior to disturbing them
- a.** Each fence crossed by will be H-braced and secured on both sides to prevent slacking of the wire, before cutting the wire. The opening thus created will be temporarily closed as necessary during construction to prevent passage of livestock. Upon completion of construction, install a cattle guard with an adjacent 16 foot gate. The cattle guard shall be constructed to Bureau of Land Management specifications. Cattle guards will be kept clean and repaired or replaced when needed.
 - b.** A minimum of 10 feet of undisturbed surface will be maintained between fence lines and roads that are constructed parallel to fences.
 - c.** Gaps opened in natural barriers used for livestock control during construction will be fenced to prevent drift of livestock, as directed by the AO.
- 23. Cattle guards:** Cattle guards shall have grid identification marks welded into them indicating ownership, well name and number associated with the cattle guard, and foundation designs. Construction shall meet the American Association of State Highway and Transportation Officials (AASHTO) load rating H-20, although AASHTO U-80 rated grids shall be required where heavy loads, (exceeding H-20 loading) are anticipated. (See BLM standard drawings for cattle guards). Cattle- guard grid width shall not be less than eight feet and length of not less than 14 feet. A wire gate with a minimum width of 16 feet will be provided on one side of the cattle guard.

CATTLE GUARD INSTALLATIONS

New Installations (Mandatory)

Existing Reinstallations (BLM Recommendation)

- * 50' each side of installation for collector roads.
- (25' each side of installation for lease roads.)



Note: Adjust drainage away from cattle guard as needed.

Materials estimate:

1. 3/4" ROAD BASE, 80 YARDS (COLLECTOR ROADS)
3/4" ROAD BASE, 40 YARDS (LEASE ROADS)
2. CEMENT SILLS (2)
3. BARBED WIRE, EACH WING TO FENCE LINE
4. CATTLE GUARD (20' Min. Collector roads, 14' Min. lease roads)

24. **Vegetation:** To reduce areas of soil disturbance, mow or brush beat vegetation for areas of the well pad and/or access road where excavation is not necessary. All vegetative debris should be chipped and distributed across the cleared areas to reduce soil erosion where feasible, with the remainder being removed from the area and disposed of at an approved location per the AO.

Cultural Resources

Construction, construction maintenance or any other activity outside the areas permitted by the APD will require additional approval and may require a new cultural survey and clearance.

1. **Employee Education:** All employees of the project will be informed cultural sites are to be avoided by all personnel, personal vehicles and company equipment. They will also be notified it is illegal to collect, damage or disturb cultural resources.
2. **Discovery of Cultural Resources in the Absence of Monitoring:** If, in its operations, operator/holder discovers any previously unidentified historic or prehistoric cultural resources, then work in the vicinity of the discovery will be suspended and the discovery promptly reported to Bureau of Land Management Field Manager. The Bureau of Land Management will then specify what action is to be taken. If there is an approved "discovery plan" in place for the project, then the plan will be executed. In the absence of an approved plan, the Bureau of Land Management will evaluate the significance of discovery and consult with the State Historic Preservation Officer in accordance with 36 CFR Section 800.11. Minor recordation, stabilization, or data recovery may be performed by a Bureau of Land Management or permitted cultural resources consultant. If warranted, more extensive treatment by a permitted cultural resources consultant may be required of the operator/holder prior to allowing the project to proceed. Further damage to significant cultural resources will not be allowed until any required treatment is completed. Failure to notify the Bureau of Land Management about a discovery may result in civil or criminal penalties in accordance with the Archeological Resources Protection Act of 1979 (as amended).
3. **Discovery of Cultural Resources during Monitoring:** If monitoring confirms the presence of previously unidentified cultural resources, then work in the vicinity of the discovery will be suspended and the monitor will promptly report the discovery to the Bureau of Land Management Field Manager. The Bureau of Land Management will then specify what action is to be taken. If there is an approved "discovery plan" in place for the project, then the plan

will be executed. In the absence of an approved plan, the Bureau of Land Management will evaluate the significance of the discovery and consult with the State Historic Preservation Officer in accordance with 36 CFR Section 800.11. A Bureau of Land Management or permitted cultural resources consultant may perform minor recordation, stabilization, or data recovery. If warranted, more extensive treatment by a permitted cultural resources consultant may be required of the operator/holder prior to allowing the project to proceed. Further damage to significant cultural resources will not be allowed until any required treatment is completed.

4. **Damage to Sites:** If, in its operations, operator/holder damages, or is found to have damaged any previously documented or undocumented historic or prehistoric cultural resources, excluding "discoveries" as noted above, the operator/holder agrees at his/her expense to have a permitted cultural resources consultant prepare and have executed a Bureau of Land Management approved data recovery plan. Damage to cultural resources may result in civil or criminal penalties in accordance with the Archeological Resources Protection Act of 1979 (as amended).

Access Road

1. **Mineral Materials:** No gravel or other related minerals from new or existing pits on federal land will be used in construction of roads, well sites, etc., without prior AO approval.
2. **Design:** Unless otherwise approved in writing by the AO the access road will be designed and constructed to conform to the Bureau of Land Management, New Mexico road construction/maintenance policy. A professional engineer shall design those segments of road where the grade is in excess of ten percent for more than 300 feet. Avoid straight roads to mitigate soil erosion and visual resource impacts. When possible, design roads and other features to follow contour of landform or mimic lines in vegetation. Construct the minimum road necessary.
3. **Staking:** The holder shall place slope stakes, culvert location and grade stakes, and other construction control stakes as deemed necessary by the authorized officer to ensure construction in accordance with the plan of development. If stakes are disturbed, they shall be replaced before proceeding with construction.
4. **Width:** Right-of-way clearing shall be limited to 15 feet on each side of centerline and a maximum driving surface of 16 feet. There will be a maximum bladed width of 30 feet excluding turnout ditches and turnouts, and a maximum grade of 10 percent.
5. **Crowning and Ditching:** Crowning and ditching on both sides of the road is required. The road cross section will conform to the cross section diagrams available from Bureau of Land Management. The crown shall have a grade of approximately two percent (i.e., two inch crown on a 16 foot wide road). "Flat blading" will only be permitted where bedrock is exposed at the surface
6. **Drainage and Culverts:** Drainage control shall be ensured over the entire road through the use of borrow ditches, drainage dips, out-sloping, in-sloping, natural rolling topography, and/or turnout (lead-off) ditches. Every drainage dip shall drain water into an adjacent turnout ditch. Culverts (18" minimum) will be placed across access road as necessary.
 - a. Unless otherwise approved in writing by the AO, drainage dip location for grades over two (2) percent shall be determined by the formula:

$$\text{Spacing Interval} = \frac{400 + 100'}{\text{road slope \%}}$$

Example: For a road with a four (4) percent slope.
Spacing Interval

$$\frac{400 + 100'}{4} = 200$$

feet

4%

- b. Unless otherwise approved in writing by the AO, all turnout ditches shall be graded to drain water with a one (1) percent minimum to three (3) percent maximum ditch slope. The spacing interval for turnout ditches shall be determined according to the following table, but may be amended depending upon existing soil types and centerline road grade:

SPACING INTERVAL FOR TURNOUT DITCHES

Percent Slope	Spacing Interval
0 - 4%	150 - 350 feet
4 - 6%	125 - 250 feet
6 - 8%	100 - 200 feet
8 - 10%	75 - 150 feet

- c. Maintain the road so that user traffic remains within right-of-way and erosion is mitigated. Roads and road segments where serious erosion damage is occurring will be handled on a case-by-case basis.
 - d. The holder shall construct low-water crossings in a manner that will prevent any blockage or restriction of the existing channel. Material removed shall be stockpiled for use in rehabilitation of the crossing.
- 7. Surfacing:** Surfacing material may be applied at the Holder's discretion but is not required at this time. If it becomes evident there is resource damage or it becomes evident the road is receiving excess damage, surfacing will be required.
- 8. Maintenance:** Roads will be maintained so that over time a proper road prism and good drainage is achieved. Maintenance will include drainage dips, turnout ditches, crowning and/or out-sloping/in-sloping, low water crossings and vehicle turnouts.
- e. The Holder will furnish and apply water, chemicals, or use other means satisfactory to the Authorized Officer for dust. Failure to share maintenance costs in dollars, equipment, materials or man-power proportionate to the holder's use with other authorized users may be adequate grounds to terminate the lease. The determination as to whether this has occurred and the decision to terminate shall rest with the AO.
 - f. Upon request, the AO shall be provided with copies of any maintenance agreement entered into.

Pipeline

Construction of the pipeline or any other surface disturbing activity will not begin until the associated APD is approved. The holder will adhere to the general and pipeline specific stipulations in the APD Condition of Approval.

- 1. Staking:** The holder shall mark the exterior boundaries of the right-of-way with stake and/or lath at 100 to 200 foot intervals. The intervals may be varied at the time of staking at the discretion of the AO. The tops of the stakes and/or laths will be painted and the laths flagged in a distinctive color as determined by the holder. The survey station numbers will be marked on the boundary stakes and/or laths at the entrance to and the exit from public land. The holder shall maintain all boundary stakes and/or laths in place until final cleanup and restoration is completed and approved by the AO. The stakes and/or laths will then be removed at the direction of the AO.

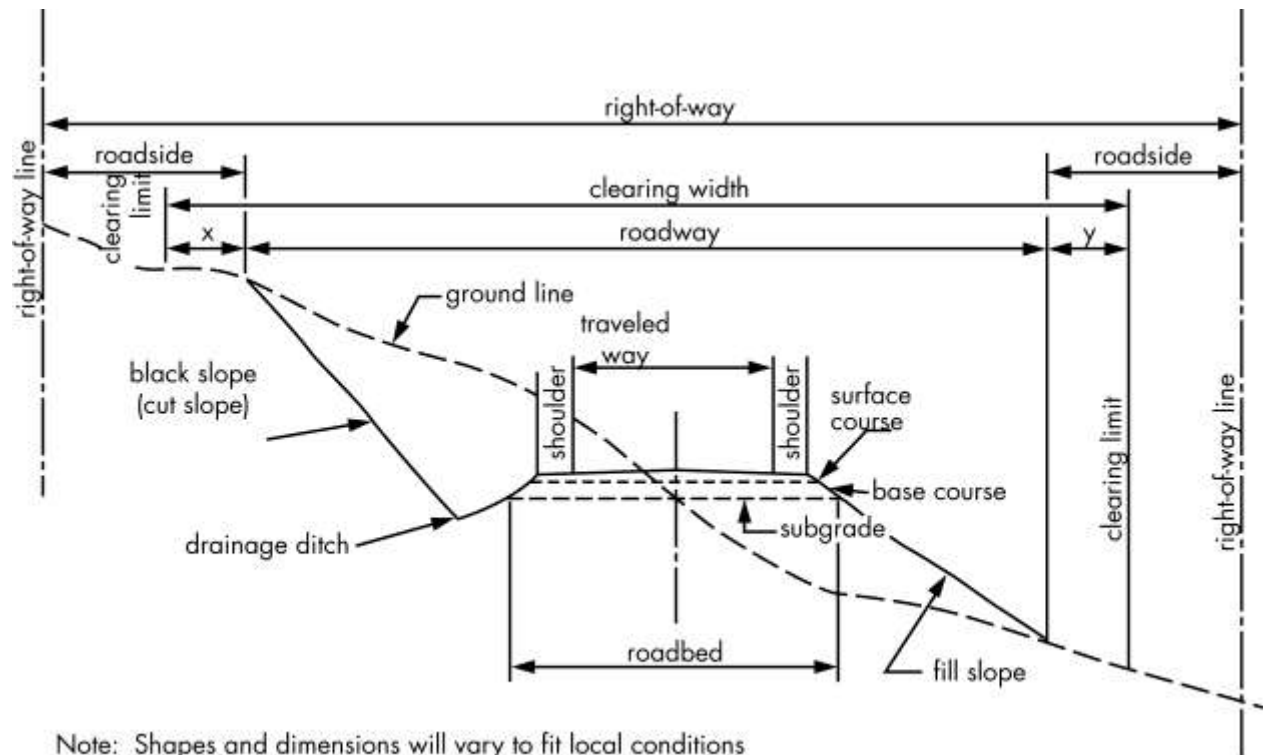
2. **Width:** Right-of-way clearing shall be limited to the access road plus 20 feet. Bury the pipeline in the existing well pad or twenty (20) feet from the edge of the traveled surface of the existing road. Bury flow lines in existing disturbed areas rather than running above ground cross country.
3. **Side Cuts:** Side-hill cuts of more than three (3) feet are not permitted. Areas requiring cuts greater than this shall be terraced so none are greater than three (3) feet.
4. **Re-contouring:** All disturbed areas will be re-contoured to establish approximate original contours of right-of-way. This includes obliterating all earthwork by removing embankments, backfilling excavations, and grading to re-establish the approximate original contours of the land in the right-of-way.
5. **Berms:** Construct earthen berms at each end of the right-of-way where it is separated from the road. The berms will be a minimum of four (4) feet high with a one (1) foot cut at the base facing away from the right-of-way, i.e., towards the direction of potential traffic.

Abandonment

Ninety days prior to termination of the right-of-way the holder shall contact the AO to arrange a joint inspection of the ROW. This inspection will be held to agree to an acceptable termination (and rehabilitation) plan. The plan will include, but is not limited to, removal of facilities, drainage structures, or surfacing material, re-contouring, top soiling or seeding. The AO must approve the plan in writing prior to the holder's commencement of any termination actions.

Final Reclamation and Abandonment

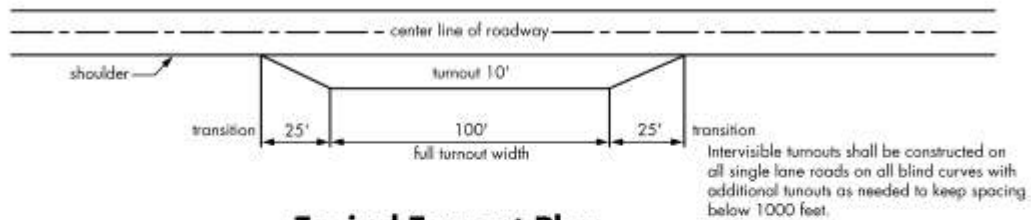
If, upon abandonment of wells, the retention of access road is not considered necessary for the management and multiple use of the natural resources, it will be ripped a minimum of 12" in depth. After ripping, water bars will be installed. All ripped surfaces are to be protected from vehicular travel by construction of a dead end ditch and earthen barricade at the entrance to these ripped areas. (Re-seeding of affected areas may be required). Earthwork for reclamation should be completed within six (6) months of plugging.



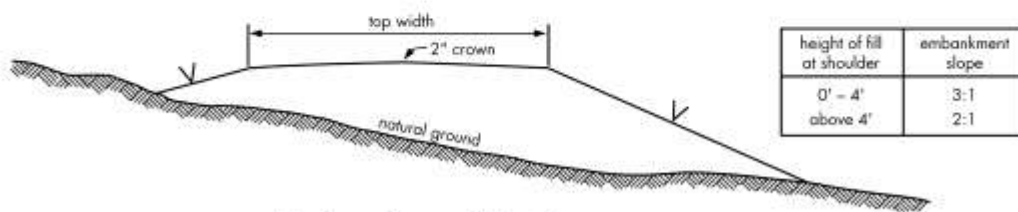
Note: Shapes and dimensions will vary to fit local conditions
 See drawings for typical sections
 x and y denote clearing outside of roadway

Construction Steps

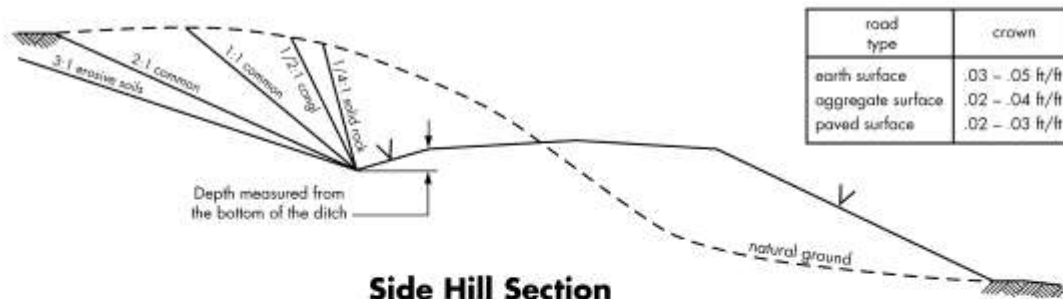
1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes



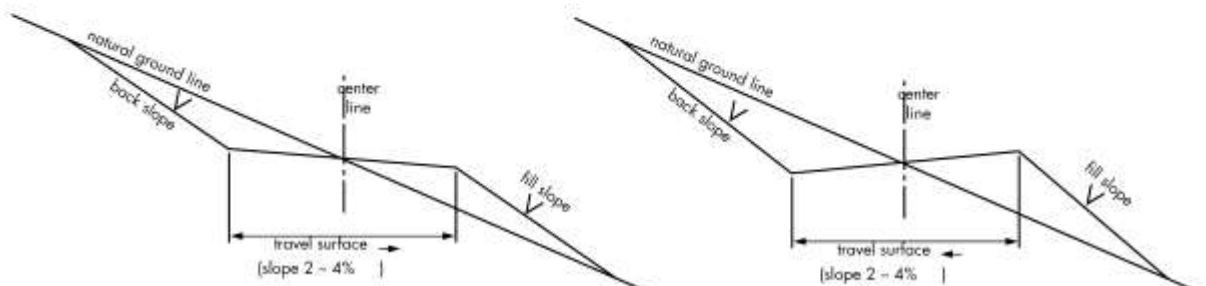
Typical Turnout Plan



Embankment Section



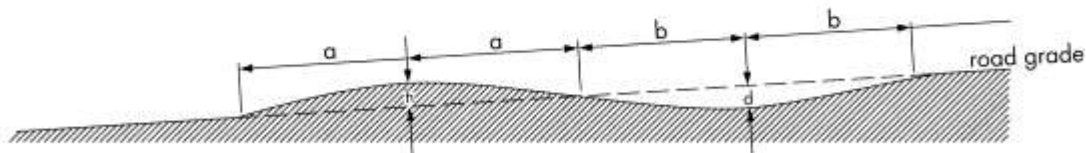
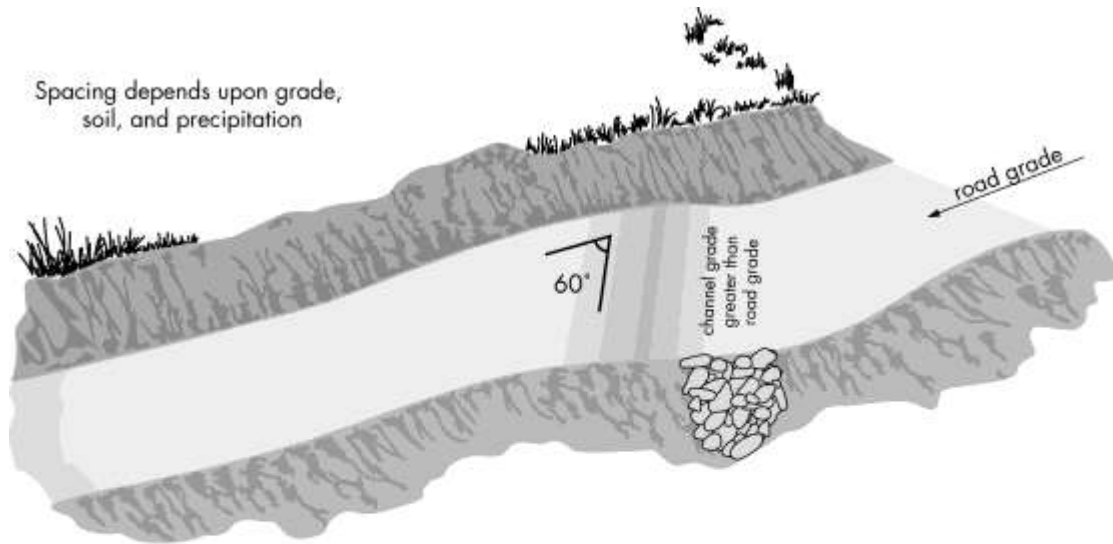
Side Hill Section



Typical Outsloped Section

Typical Insloped Section

Spacing depends upon grade,
soil, and precipitation



Cross-Section of Waterdip on Center Line

Road Grade	d	h	a	b
2%	0.6'	0.4'	10'	10'
4%	1.0'	0.8'	14'	14'
6%	1.2'	1.4'	16'	18'
8%	2.0'	2.2'	22'	24'

Maximum Recommended Culvert Spacing (ft)

Soil Type	Road Grade 2-4%	Road Grade 5-8%	Road Grade 9-12%
Highly erosive granitic or sandy	240	180	140
Intermediate erosive clay or loam	310	260	200
Low erosive shale or gravel	400	325	250

Appendix V: Discussion of Issues Considered and Dismissed

Areas of Critical Environmental Concerns (ACECs)

The proposed action is not located within any ACEC presently designated by the RMP, but lies about one mile west of the Rio Chama SMA, which encompasses the deep arroyos and canyons tributary to Rio Chama (figure 2). The 2010 Draft RMP identifies BLM land to the west of the SMA as important range for big game and habitat for the Mexican spotted owl, an endangered species, and recommends that these areas and the existing SMA be incorporated into an ACEC. The proposed action is located to the east and north of the current boundaries of the SMA, outside the recommended expansion of the ACEC. The potential impacts are primarily visual, and are addressed under that topic.

Environmental Justice

Executive Order 12898 requires federal agencies to assess projects to ensure there are no disproportionately high or adverse environmental, health, or safety impacts on minority and low-income populations. Minorities comprise a large proportion of the population residing inside the jurisdictional boundaries of the Taos Field Office. However, because the project location is remote from areas of human population, the proposed action would not expose residents to adverse environmental, health or safety impacts.

Farmlands, Prime or Unique

There are no farmlands, prime or unique, within the proposed project area.

Floodplains

The location of the proposed action is on relatively flat, elevated terrain, well outside the limits of any flood plains (see figures 4 and 8).

Wastes, Hazardous or Solid

The Resource Conservation and Recovery Act (RCRA) passed in 1976, establishes a comprehensive program for managing hazardous wastes from the time that they are produced until their disposal. The U.S. Environmental Protection Agency (EPA) regulations define solid wastes as any “discarded materials” subject to a number of exclusions. A “hazardous waste” is a solid waste that is (1) listed by the EPA as a hazardous waste, (2) exhibits any of the characteristics of a hazardous waste (ie - ignitability, corrosivity, reactivity, or toxicity), or (3) is a mixture of solid and hazardous waste. A 1980 amendment to RCRA conditionally exempted from regulation as hazardous wastes “drilling fluids, production waters, and other wastes associated with the exploration, development or production of crude oil or natural gas” under 40 C.F.R. § 261.4(b)(5). On July 6, 1988, the EPA determined that oil and gas exploration, development and production (ED&P) wastes would not be regulated as hazardous wastes under RCRA. A simple rule of thumb was developed for determining if a ED&P waste is likely to be considered exempt or non-exempt from RCRA regulation: if (1) the waste came from down-hole, or (2) the waste was generated by contact with the oil and gas production stream during removal of produced water or other contaminants, the waste is most likely to be considered exempt by the EPA. The Comprehensive Environmental Response Compensation and Liability Act (CERCLA), passed in 1980, deals with the release (spillage, leaking, dumping, accumulation, etc.) or threat of release of hazardous substances into the environment. Despite many oil and gas constituents wastes being exempt from hazardous waste regulations, certain RCRA exempt contaminants could be subject to regulations as hazardous substances

under CERCLA. The New Mexico Oil Conservation Division (OCD) administers hazardous waste regulations for oil and gas activity in New Mexico.

No hazardous or solid waste materials are present for the proposed action. The notification of releases such as natural gas, natural gas liquids, and petroleum outside a facility site is required under CERCLA and under BLM NTL-3A.

Water Quality – Surface/Ground

Surface waters are tributary the Chama River, located about two miles west of the proposed action. The tributary washes and arroyos usually flow only during spring snowmelt and after summer thunderstorms. Summer thunderstorms can be very intense but usually highly localized. They can create increased stream flows in the wash channels with flash flooding.

Removal of vegetation from the access road and well site would increase the potential for erosion. Because the proposed action is located on level terrain (figure 7), berms and other standard erosion control measures can effectively control runoff and prevent degradation of surface water quality. Erosion control measures would be stipulated in the Storm Water Pollution Prevention Plan (SWPPP) required for all projects involving soil disturbance. The SWPPP for this proposed action would be filed with the Taos Office as part of the Application for Permission to Drill (APD).

No impacts to ground water quality are anticipated. Modern well-drilling practices are designed to protect potable water aquifers from contamination. Moreover there are no water withdrawal wells nearby the project location (figure 2).

Wetlands/Riparian Zones

There are no wetlands or riparian zones located within the project area (see figures 2, 8). As noted in the discussion of Soils (below), the soil found in the area of the proposed action is not classified as hydric.

General Topography/Surface Geology

The proposed action is located at an elevation of 7222 ft in an area of level terrain drained by washes and arroyos. The surficial geology at the project location is the Dakota sandstone. The proposed action is not of a scale that would affect topography or surface geology.

Mineral Resources/Geology/Paleontology

The project is located within the Chama basin. The Chama Basin is an elongate, generally north-plunging and trending, shallow structural and topographic depression. It is regarded as a subsidiary part of the San Juan Basin, being separated from that large structure by the Archuleta anticlinorium and the Gallina fault zone. The Tusas Mountains form the eastern boundary, the Rio Grande trough the southeastern boundary, and the San Pedro uplift the southwestern edge. Rocks in the basin province are largely shale, sandstone, and limestone, ranging in age from Mississippian through Tertiary. Brightly variegated sedimentary rocks of the Mesozoic succession are prominently displayed in the basin province (State Bureau of Mines 1968, New Mexico Bureau of Geology). No significant outcrops or locations of paleontological resources are reported near the proposed action.

Soils

Soils affected by the proposed action are classified as the Elpedro silt loam, 1 to 5 percent slopes. This component is on hills and uplands. Slopes are 1 to 5 percent. The parent material consists of old alluvium derived from sandstone and shale. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This soil does not meet hydric criteria.

Because the proposed action affects only a small area, and because the soil is not classified as agriculturally important in this area (see also the discussion of prime and unique farmland), the impact to soil resources is not further considered in this assessment. Potential loss of soil due to erosion is addressed in the SWPPP.

Watershed – Hydrology

The project area is tributary to the Rio Chama, which drains toward the south and easterly toward Santa Cruz and Santa Fe. This project is of such small scale that it would not alter the watershed or affect the hydrology of the area. Minor impacts due to erosion of soils exposed by construction of the access road and well pad would be avoided by implementing routine erosion control measures. Erosion control measures would be stipulated in the SWPPP.

Vegetation, Forestry

The project area is characterized by Great Basin desert scrub on hills, slopes, and some valley bottom settings. The canopy of the desert shrub vegetation is dominated by big sagebrush. Scattered plants of Riddell's groundsel and pinque bitterweed occur throughout the area as well. The ground cover stratum is dominated by blue grama and crested wheatgrass. No forested areas are within the project area (figure 4). The removal of 2.53 acres of vegetation is judged to have no significant impact on the vegetation resources of the general area. Removal of vegetation increases the potential for soil erosion.

Livestock Grazing

There is no current grazing lease for the vicinity of the proposed action, although a grazing lease is under consideration. The project would have little impact on grazing as minimal forage area would be removed by the project.

Wild Horse and Burros

There are no wild horses or burros in the project area, so this potential impact was not further considered.

Recreation

The project location does not fall within any Wild and Scenic Rivers, designated Wilderness Areas or Wilderness Study Areas, Areas of Critical Environmental Concern, or designated recreational areas. It is located about a mile east of the Rio Chama SMA and overlapping Wilderness Study Area and the Rio Chama Wild and Scenic River (figure 2).

Public Health and Safety

All necessary safety precautions would be taken by all employees during construction to lessen any adverse health risks. Due to the lack of populated areas near the project area, no adverse health risks to the public are anticipated.

Appendix VI

Order-of-Magnitude Emissions Estimate for Nutrias Prospect Oil Well

An estimate of equipment use to drill a 4000-foot well in the San Juan Basin was provided by Walsh Engineering of Farmington, New Mexico. The Nutrias well would be similar in scale. This work would not necessarily be completed in consecutive days – equipment availability would dictate the actual schedule. Activities would take place during daylight hours, approximately 12 hours a day. A 20-mile round trip is assumed for personnel and equipment. The diesel horsepower (hp) indicated for the drill rigs is an estimate appropriate for drilling a well of this depth, which is relatively shallow.

Prepare drill site and grade access road – 3 days

The bulldozer is delivered to the site on a semi-trailer truck. For purposes of this estimate the bulldozer is powered by a 200 hp diesel engine.

Drill well – 5 days

The drill rig is delivered on 3 three large trucks. The drill rig needed for this project would be relatively small, powered by a total of about 700 hp – 400 hp deck engine and 300 hp mud pump. Large trucks would make two deliveries per day of casing, drilling mud, water and other consumables.

Complete well for production – 3 days

Once the well is drilled, it is completed with a smaller rig, powered by diesel engines totaling 400 hp. Large trucks would make two trips per day to deliver casing, water, cement and other consumables.

Reclaim reserve pit – 1 day

Reclaiming the reserve pit and other parts of the drill site would be completed with a bulldozer. On average, personnel would commute to the site in three pickup trucks.

Miles/hours of operation were calculated as follows:

Emissions source		Total quantity
Light truck traffic (12 days, three trucks, 20 miles/day)		720 miles
Heavy Truck Traffic		480 miles
Deliver bulldozer	40 miles	
Deliver drill rig	60 miles	
Deliver completion rig	60 miles	
Deliver supplies (2 rt/day, 8 days)	320 miles	
Stationary Diesel (horsepower x hours of operation)		57,600 hp-hrs
Bulldozer (24 hrs x 200 hp)	4800 hp-hrs	
Drill rig (60 hrs x 700 hp)	42,000 hp-hrs	
Completion rig (36 hrs x 300 hp)	10,800 hp-hrs	

Exhaust emission factors were taken from a 2005 BLM document that inventories air quality impacts of vegetation management (ENSR 2005).

Pollutant	Grams per Mile Traveled	Total in Grams
Light Truck Traffic – 720 miles		
CO	10.489	7841
NOx	0.837	603
VOCs	0.628	452
Heavy Truck Traffic – 480 miles		
CO	17.07	8194
NOx	6.49	3115
VOCs	4.82	2314
On-site Stationary Diesel Engines - 57,600 hp-hrs		
Pollutant	Grams per Horsepower-Hour	
CO	3.03	174,528
NOx	14.06	809,856
SO2	0.930	53,568
VOCs	1.14	65,664
TSP/PM10/PM2.5	0.998	57,485
Total		1,183,620

Operation of the well would generate air emissions from the pump jack and vehicle emissions from the service truck. Emissions for the pump jack are based on a 13 horsepower natural gas powered engine operating 25% of the time. Vehicle emissions are based on a weekly visit by a tanker truck to collect oil from the on-site tank.

Pollutant	Grams per Mile Traveled	Total in Grams
Heavy Truck Traffic – 20 mile r/t x 52 weeks – 1040 miles		
CO	17.07	17,752
NOx	6.49	6854
VOCs	4.82	5012
On-site Stationary NG Pumpjack Engine 13 hp/2190 hrs		
Pollutant	Grams per Horsepower-Hour	
CO	45.5	1,295,385
NOx	6.0	170,820
SO2	0	
VOCs	0	
TSP/PM10/PM2.5	0	
Total		1,495,823

References

ENSR International, 2005. Annual Emissions Inventory for BLM Vegetation Treatment Methods - Final Report, April 2005. Bureau of Land Management Contract No. NAD010156 ENSR Document Number 09090-020-610.